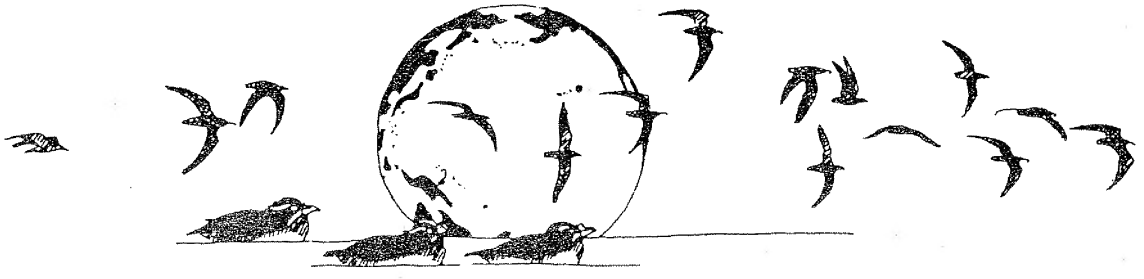
PACIFIC SEABIRDS



A Publication of the Pacific Seabird Group

Volume 26 Number 2

Fall 1999

Dedicated to the Study and Conservation of Pacific Seabirds and Their Environment

The Pacific Seabird Group (PSG) was formed in 1972 out of a need for better communication among Pacific seabird researchers. The Group coordinates and stimulates the field activities of members involved in research and informs its members and the general public of conservation issues relating to Pacific Ocean seabirds and the marine environment. Group meetings are held annually and the PSG publication, *Pacific Seabirds* (formerly the *PSG Bulletin*), is issued biannually. Current activities include involvement in seabird sanctuaries, seabird restoration after oil spills, seabird/fisheries interactions, and endangered species. Policy statements are issued on conservation issues of critical importance. Although PSG's primary area of interest is the west coast of North America and adjacent areas of the Pacific Ocean, it is hoped that seabird enthusiasts in other parts of the world will join and participate in PSG. PSG is a member of the U.S. Section of the International Council for Bird Preservation and the International Union for Conservation of Nature (IUCN). Annual dues for membership are $20 (individual and family); $13 (student, undergraduate and graduate); and $600 (Life Membership, payable in five $120 installments). Dues are payable to the Treasurer (see Membership page for details and application). PSG is a member of the American Bird Conservancy.

Pacific Seabirds

Pacific Seabirds (ISSN 1089-6317) is published twice a year, in the spring and fall, and contains news of interest to PSG members, including regional seabird research, conservation news, and abstracts of papers presented at the annual meeting. *Pacific Seabirds is* an outlet for the results of scientific research, as well as articles and shorter items on seabird conservation, seabird research activities, and other topics related to the objectives of PSG. All materials should be submitted to the Editor, except that technical manuscripts should be submitted to the Associate Editor for Technical Manuscripts and conservation-related material should be submitted to the Associated Editor for Conservation. Back issues of the *Bulletin* or *Pacific Seabirds* may be ordered from the treasurer: please remit $2.50 each for Vols.1-8 (1974-1981) and $5.00 each for Vol. 9 and later (see Membership Application for details and order form).

World Wide Web Site

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All items intended for publication in Pacific Seabirds must be received by The Editor or Associate Editors prior to March 15 (Spring issue) and September 15 (Fall issue). Manuscripts may be submitted at any time.

PACIFIC SEABIRDS

A Publication of the Pacific Seabird Group

Dedicated to the Study and Conservation of Pacific Seabirds and Their Environment

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CONSERVATION NEWS

By *Craig S. Harrison*

CASPIAN TERN PREDATION ON JUVENILE SALMONIDS

The Caspian Tern Working Group, comprised of federal, state, tribal, and research groups, has completed a pilot project to reduce Caspian tern predation on out-migrating juvenile salmon and steelhead smolts in the Columbia River Estuary. During the 1999 nesting season, Caspian terns were precluded from nesting on all but 1.9 acres (1 acre site plus a 0.9 acre buffer) of their 8 acre colony site on Rice Island through a combination of silt fencing, plantings and harassment.

Even with the reduced habitat, 8,096 pairs of terns nested on Rice Island in 1999. Approximately 8 acres of habitat was created on East Sand Island, 16 miles closer to the mouth of the estuary. Through the use of decoys and sound systems, 1,400 pairs of terns were attracted to nest on East Sand Island.

Studies on diet composition found that terns on Rice Island and East Sand Island consumed 75% and 44% salmonids, respectively. Total salmon consumption by terns in 1999 is currently being determined. Tern consumed about 10.8 million smolts in 1998, about 11.2% of the out-migrating smolts which reached the estuary or 5.7% of the hatchery smolts produced basin-wide.

The Caspian Tern Working Group is developing a management plan for the 2000 nesting season that will be available for public review. It is recommending eliminating nesting habitat on Rice Island and creating additional colony sites along the Washington coast in Grays Harbor and southern Puget Sound. Alternatives being considered for East Sand Island include: 1) maintaining the nesting habitat created in 1999; 2) providing limited nesting habitat (1.5 acres which would support 4,500 pairs); and 3) precluding all nesting through whatever means necessary.

The Caspian Tern Working Group meets the first Wednesday of every month at the National Marine Fisheries Service office in Portland, Oregon, from 9:00 am to 12:00 pm. Interested parties may attend and comment at the end of the meetings. For further information,, call Colleen Henson, U.S. Fish and Wildlife Service (503) 231-6179.

Colleen Henson

CASPIAN TERNS MAY BE REMOVED FROM COLUMBIA RIVER ECOSYSTEM

The National Marine Fisheries Service (NMFS) blames Caspian Terns for declines in salmon populations in the Columbia River estuary because the birds eat hatchery-raised smolt of federally listed coho, chinook and steelhead salmon. However, spring chinook jack counts in 1999 were the highest since the mid-1970s, indicating that Caspian terns are not a significant drag on survivorship. Many NMFS scientists agree that ocean conditions and factors affecting ocean survivorship of salmon are far more important than tern foraging habits, but NMFS hatchery managers seem committed to their current management approach.

Caspian Terns have become a convenient scapegoat for agency failures to manage fisheries and to mitigate effectively the damages to migratory fishes caused by dredging and the construction of enormous dams in the Columbia River system. Numerous other actions will provide far more benefit to recovering salmon populations, including changing water flows in Columbia River dams, improvements in fish hatcheries and restrictions on commercial and recreation fishing.

The interstate Northwest Power Planning Council wants to develop a long-term plan that limits Caspian Tern predation to less than 5% of the smolts that make it to the estuary in 2000. One option that seems to have the support of the Army Corps of Engineers, NMFS, Idaho Fish & Game Department and several tribes is to terminate all nesting on Rice Island and East Sand Island in 2000. Some are urging killing 20 percent or more of the tern colony. Other options being considered include maintaining habitat on East Sand and Rice Island and attempting to restore colonies at Gunpowder Island (Willapa Bay) and No-name Island (Grays Harbor). These areas probably have insufficient habitat for what is the largest Caspian Tern colony in the world. PSG has urged that no Caspian Tern nesting habitat be destroyed without first restoring or creating sufficient suitable habitat elsewhere.

In October, the federal Bonneville Power Administration decided to prepare an environmental impact statement (EIS) on these issues. It is unknown whether this decision will preclude some of the drastic actions being considered by others. Thanks to the hard work of David Ainley, PSG has been urging the preparation of an EIS since mid-1998 because destroying the nesting habitat of 30 percent of the Caspian Tern nesting habitat must surely be considered a "major federal action significantly affecting the quality of the human environment" under the National Environmental Policy Act. PSG will comment on the scope of the environmental impact statement to ensure that it includes a full and fair discussion of reasonable alternatives and mitigates any adverse impacts on seabirds.

Craig S. Harrison

WASHINGTON STATE FISHERY ISSUES

SALMON NET FISHERY CLOSURE ELIMINATES SEABIRD DEATHS

The by-catch of murres, grebes, rhinoceros auklets and murrelets by fishing for sockeye and pink salmon was reduced to practically zero in Washington state in 1999 because little fishing was allowed targeting Fraser River salmon stocks. Even had there been a fishery, impacts on seabirds would likely have been much lower than in 1994, when an estimated 3,500 seabirds were drowned in non-Indian nets. The gillnet fleet is now much smaller and non-Indian fishermen must

use "bird mesh" (Pacific Seabirds 25:69). Treaty Indian fishery managers have chosen not to require this alternative gear.

Both mid-and late-summer sockeye stocks returned below pre-season forecasts. Fraser River pink salmon returned at pre-season forecasts, but no major commercial fisheries were allowed on them. Fishery managers require that run sizes are sufficient to provide the escapement goals before fisheries are allowed to harvest the surplus. Canadian fishery managers allocated almost all of the Canadian surplus to their in-river "aboriginal fisheries," and used concerns for other salmon stocks to maintain fishery closures in marine waters.

In the U.S., by the time managers identified a harvestable surplus of late-run sockeye, over 90% of the sockeye and pink salmon were migrating through Canada's Johnstone Strait, rather than through the Strait of Juan de Fuca. With the low abundance of target species in Washington waters and concerns for incidental catches of Canadian coho and ESA-listed wild Puget Sound chinook, fishery managers decided not to allow a commercial fishery in the San Juans/Point Roberts area.

A small fishery was conducted by Strait of Juan de Fuca treaty tribes for under 20,000 sockeye. About a dozen gill net fishers fished for 12 days, significantly fewer fishers than in 1994, when 30 boats fished for 36 days.

Jon Anderson

SPORT FISHERY IMPACTS TO SEABIRDS ASSESSED

Washington State sport fishers along the coast and in Puget Sound are being surveyed to determine the number and type of seabirds hooked. Among the questions being asked are whether the bird swallowed the hook, whether the fisherman removed the hook and whether the bird was still alive when it was released. The sampling rate on the coast is about 25%, and may be somewhat less in Puget Sound. These data will be used to estimate the number of seabirds that are encountered in sport fisheries in Washington. A major source of error is expected to be the inability of many anglers to correctly identify birds.

Jon Anderson

VOTERS REJECT BAN ON GILLNET FISHING

An initiative to ban most non-tribal fishing, including all gillnet fishing, failed to win voter approval in the state of Washington in November by a 58% to 42% margin. While it would have eliminated non-tribal gillnet fishing, the measure could have caused seabird by-catch to increase. Tribal fishermen do not use the modified gear that is required in non-tribal fisheries to minimize seabird by-catch. Thus the tribal fishery could have increased because it would be allowed to harvest any available surplus of sockeye, pink and chum salmon that the non-tribal fishery had harvested. A biological opinion issued under the Endangered Species Act to protect marbled murrelets requires tribal fishermen in these fisheries to develop a conservation plan to reduce the risk of murrelet by-catch, but does not address by-catch of other seabirds.

OTHER CONSERVATION NEWS

UNITED NATIONS PASSES LONGLINE RESOLUTION

Hundreds of thousands of seabirds are being killed each year in longline fisheries worldwide. In June, the U.N. Food & Agriculture Organization (FAO) adopted an international plan of action to reduce incidental catch of seabirds in longline fisheries. That plan calls for each nation to develop a National Plan of Action if a seabird by-catch problem exists, and must be ready for implementation by February 2001. PSG met with the U.S. plan writer during summer 1999 and discussed key elements to be included.

The Seabird Inter-Agency Working Group (representatives from the National Marine Fisheries Service and the U.S. Fish & Wildlife Service) is developing the U.S. plan, the schedule and outline for which was published in the Federal Register in September. PSG urged that this plan serve as a global model by greatly reduces or eliminates the killing of seabirds in longline fisheries in the USA. PSG stated that unless the U.S. adopts and implements such a plan, few fishing nations will voluntarily implement strong national plans to stop the slaughter of hundreds of thousands of seabirds annually on longline hooks.

PSG URGED THAT THE NATIONAL PLAN OF ACTION INCLUDE THE FOLLOWING:

1. Require avoidance measures for all U.S. flag longline vessels;

2. Commit to providing sufficient observers to assess seabird mortality and monitor compliance in all U.S. longline fisheries;

3. Commit to funding research to develop better avoidance measures;

4. Commit to education, training and publicity;

5. Commit to exercising international leadership and co-operation; and

6. Provide for a comprehensive annual report that estimates seabirds killed by U.S. fisheries, beginning for calendar year 2000.

USFWS ISSUES DEPREDATION PERMITS FOR DOUBLE-CRESTED CORMORANTS

The U.S. Fish & Wildlife Service issued depredation permits to New York and Vermont wildlife agencies allowing them to oil the eggs of 7,500 nesting cormorant pairs on Little Galloo Island, Lake Ontario, and 3,000 pairs on Young Island, Lake Champlain. The purpose was to diminish the impacts cormorants were having on other colonial nesting species and small mouth bass, a popular sport fish. New York contended that a study demonstrated cormorants are harming bass populations in Lake Ontario. Other scientists believe the report failed to rule out other causes and demonstrates a correlative rather than causal relationship between high cormorant populations and declines in bass populations. Since 1994,

New York has destroyed cormorant nests, eggs and adult cormorants as they have started to establish colonies on Lake Ontario islands other than Little Galloo Island. New York also asked to kill 300 adults as part of broader cormorant control project. FWS did not grant that permit, citing the need to first develop a comprehensive plan and environmental impact statement to manage the cormorant population in the eastern U.S. Nor did FWS approve Vermont's request to oil ring-billed gull eggs on Young Island.

THREATENED STELLER'S EIDER BREEDING SUCCESS MAY DEPEND ON LEMMINGS, JAEGERS

Survey work near Barrow, Alaska, has found that threatened Steller's eiders only attempted to nest in lemming years. The super- abundance of lemmings, which provide the preferred food for predators such as arctic foxes and ravens, may reduce predation pressure on the ducks. The eiders also seem to benefit by sharing territories with aggressive pomarine jaegers which arrive to exploit the lemmings during boom years. According to Lori Quakenbush, eider breeding may even be cued by the presence of jaegers which signals the 'all clear' to nest. Although the territorial jaegers drive other predators from nesting areas, they can also turn on eider ducklings if an initially high lemming population is not sustained through the season. A comprehensive survey in the Barrow area this June located 154 pairs of eiders, giving the best minimum estimate for the U.S. population to date; the total is probably no more than 500 pairs. The reason for the species' range contraction in Alaska is unknown but USFWS is developing a Steller's eider recovery plan, which should be available in late 1999.

OUTER CONTINENTAL SHELF LEGISLATION IN SUPPORT OF WILDLIFE GAINS MOMENTUM

Game-focused budgets for the 50 states add up to about $1 billion annually. Non-game programs, lacking a dedicated funding source, receive less than $140 million. Legislation before Congress would use outer continental shelf oil and gas revenues to secure dedicated, state-based funding for wildlife programs. Funds would support a variety of state non-game activities to promote conservation, education, and recreation related to the many creatures - 86% of our wildlife species and 90% of native birds - that are neither hunted nor fished. The Conservation and Reinvestment Act (H.R. 701 and S.25) enjoy wide bipartisan backing and could provide funding that was undreamed of just a few years ago. Depending on the bill, from $321 million to $459 million annually could become available to the states for wildlife programs, with far-reaching implications for the future of seabird conservation. The bills also provide $900 million annually for acquisition of parks and refuges.

MIGRATORY BIRD TREATY DISCUSSIONS WITH JAPAN ARE POSITIVE

The U.S.-Japan migratory bird treaty covers 190 shared species However, only three meetings have taken place under the auspices of that convention since the treaty was implemented in 1974, the most recent being in 1981. At a February gathering in Tokyo, preliminary agreements were reached on a proposed joint Dunlin research project, the first of its kind between Japan and the U.S. The subspecies of interest breeds in Alaska, and stops over or winters in Japan. Japan recently sent a team to Alaska's North Slope to help color-band and radio-mark these birds to assess their migratory movements and timing. The effort will also aid the banding and identification in western Alaska and Japan during migration this fall. Short-tailed Albatross conservation was also discussed, including management, re-colonization, by-catch reduction, satellite tracking, and the U.S. endangered listing. The two nations agreed to meet again in Anchorage in May 2000 which may provide a vehicle for increased collaboration on seabird conservation.

USFWS WILL PREPARE NATIONWIDE CORMORANT MANAGEMENT PLAN

Responding to increasing concerns about the possible effect of double-crested cormorant populations on recreational fishing, habitat and other migratory birds, the U.S. Fish and Wildlife Service has announced that it will develop a comprehensive national cormorant management plan. More information about cormorants, and a copy of the Notice of Intent to write an environmental impact statement can be found on the Service web site at http://www.fws.gov/r9mbmo/issues/cormorant/cormorant.html or contact Chris Tollefson 202-208-5634 for details.

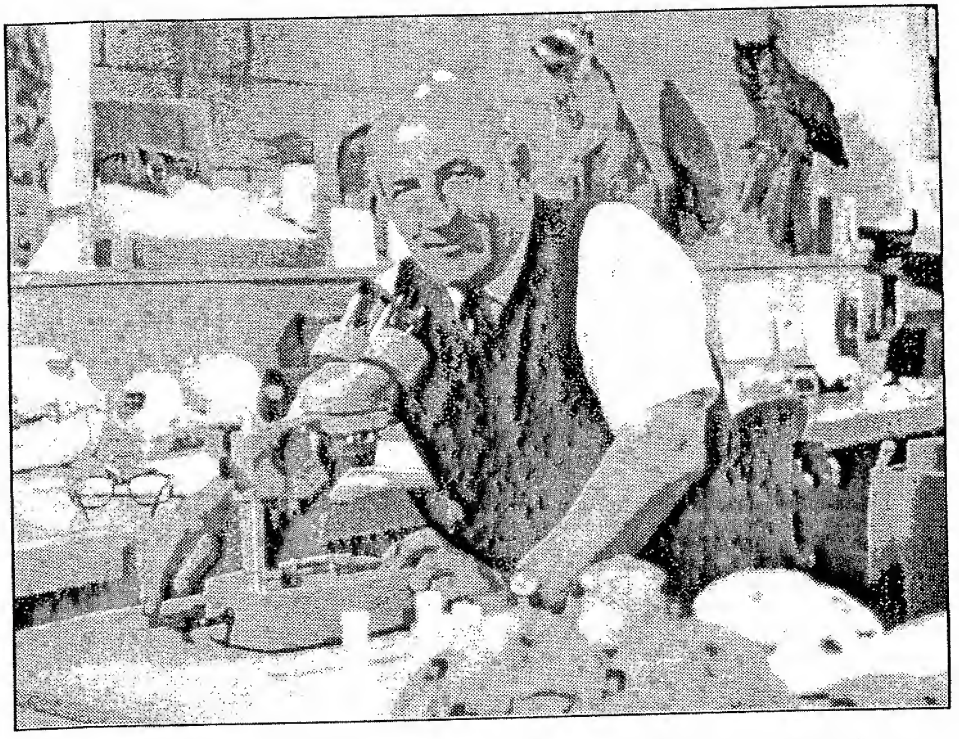
Mark Rauzon

PSG NEWS

IN MEMORIAM: Charles Joseph Guiguet

By *Harry R. Carter*

Charles Joseph Guiguet passed away peacefully, with his wife Muriel at his side, on 27 March 1999 in Victoria, British Columbia. He is survived by Muriel, brother Marcel, children Jo Ann, Tricia, Mark and Suzanne, and grandchildren Matthew, Michelle, Colin, Tyson and Mitchell. Guiguet was Curator of the Birds and Mammals Division at the British Columbia Provincial Museum (now the Royal British Columbia Museum) from 1948-1980 and received B.Sc. and M.Sc. degrees (Zoology) from the University of British Columbia. He was a pioneer of the study of birds and mammals in B.C. and received the Lifetime Achievement Award from the Pacific Seabird Group in 1995 (see *Pacific Seabirds*, 1996, 23(1): 9-10).



Charles Guiguet and museum specimens used for teaching Saturday morning classes in the east wing of the Parliament Buildings, Victoria, B.C

Guiguet was born in Shaunavon, Saskatchewan, on 2 September 1915, shortly after his parents immigrated to Canada from France. Charles grew up with a 22-caliber rifle in hand, collected butterflies, and started a natural history museum in grade 8. J.A. Munro of the National Museum showed Guiguet how to properly prepare a museum specimen, using a Black-footed Ferret shot by school children. After moving to Vancouver, B.C., he joined a National Museum field party, under H. Laing, in 1935. He also met I. McTaggart-Cowan and collected for the B.C. Provincial Museum between 1935-1940. In 1941, he married Muriel Waller in Wells, B.C. In 1942, he started military training and arrived in England a few days before D-Day in June 1944. Guiguet flew on 23 bombing trips over Germany with the 78th squadron of the Canadian Air Force and then flew 25 secret night missions in Italy for the Royal Air Force to drop off agents in Czechoslovakia, Poland and Egypt.

After the war, Guiguet returned to the University of British Columbia and again studied and worked under McTaggart-Cowan. In 1948, he was hired at the B.C. Provincial Museum, then located in the east wing of the Parliament Buildings in Victoria. In the late 1940s and 1950s, Guiguet travelled widely in B.C. to collect and study birds and mammals, especially in remote coastal areas where he discovered vast populations of nesting seabirds in the Queen Charlotte Islands and elsewhere. In 1961, he co-authored the "Catalogue of British Columbia seabird colonies" with R. Drent. Guiguet also spent many years observing Marbled Murrelets at sea and searching for their elusive nest, publishing an important article "Enigma of the Pacific" in 1956. From 1954-1983, Guiguet produced a series of 10 museum handbooks on the "Birds of British Columbia" and co-authored the "Mammals of British Columbia" with McTaggart-Cowan. Decades of valuable observations are preserved in his detailed field notes. In the 1960s and 1970s, Guiguet oversaw a major transition at the museum, including moving into new buildings and hiring and training many division staff, including: W. Campbell, E. Courtnall, R. Gibbs, E. Gillard, E. Lemke, M. Paul, P. Nott, M. Shepard, G. Stewart, K. Taylor, and S. Watson. At the new museum, Guiguet built the research collections, better documented bird and mammal fauna of B.C., designed large natural history dioramas and collected birds and mammals for display, studied Deer Mice on coastal islands (assisted by daughter Tricia), and conducted division administration. He retired in 1980.

Over the years, the Guiguet circle provided connection between many early B.C. biologists and naturalists (e.g., C. Carl, B. Harris, P. Martin, I. McTaggart-Cowan, D. Munro, D. Robinson, G. Smith), as well as many fishermen and hunters. Coastal living, work, exploration, and recreation have been a mainstay

for the Guiguets. Charles and his 17-foot wooden fishing boat ("Pride of the Fleet") were well known for legendary catches. Son Mark and grandson Matthew have similar talents and have fished commercially. Great respect and friendship arose through Charles' great knowledge of natural history and remote B.C. geography, amazing instinct and ability as a fisherman and hunter, constant humor and humility, and down-to-earth appreciation of life and people. Guiguet feasts and dance parties were famous because the Guiguets loved life, as did all that were fortunate enough to share time with them either in Victoria, Bamfield, or remote field locations.

In 1975, the museum set out on the first complete survey of seabird colonies of Vancouver Island, on which I was fortunate to be a 19-year-old summer field assistant. One strong memory of mine was helping Charles dig out seabird burrows to determine species composition in deep soil on forested nesting islands in desolate Kyuquot Sound while hearing stories of how at night these areas would be covered with a variety of vocalizing storm-petrels and crashing alcids. Such experiences helped developed my interest in seabirds and taught me how Charles had discovered much of the vast populations of burrow-nesting seabirds in the Queen Charlotte Islands (daughter Suzanne assisted museum resurveys of these colonies in 1977). A long-time museum collector, Charles represented over two centuries of scientific thought that espoused the strength of scientific specimens and direct personal observations through working and living in remote field settings. Charles was very capable of and enjoyed this work and life with Muriel's constant love, support and companionship at home and in the field for their 57 years of marriage. He was fortunate to experience and document truly natural habitats in B.C. before many of the environmental impacts of the modern era. Charles has left us all with a firm foundation and baseline on the seabirds and other vertebrate fauna of B.C.

Donations to the "Charles Guiguet Book Award" can be made by sending a cheque or money order to: Charles Guiguet Book/Prize Bursary, c/o University of Victoria, Development Office, P.O. Box 3060, Victoria, B.C. V8W 3R4 Canada.

Harry R. Carter, USGS, Dixon, California

[Note: The obituary for the late Charles J. Guiguet that appeared in the last issue of Pacific Seabirds was mistakenly a reprint of the article that appeared in Pacific Seabirds in 1996 (Volume 23, Number 1, Pages 9-10) for his receiving the PSG Lifetime Achievement Award.]

PACIFIC SEABIRD GROUP
2000 ANNUAL MEETING - NAPA, CALIFORNIA

TWENTY SEVENTH ANNUAL MEETING
23-26 FEBRUARY 2000

The Twenty Seventh Annual Meeting of the Pacific Seabird Group will be held at the Napa Valley Marriott, California.

CONSULT THE PSG WEB SITE FOR THE MEETING SCHEDULE
PAPER AND POSTER SESSIONS, COMMITTEE MEETINGS, SOCIAL EVENTS
REGISTRATION MATERIAL - CALL FOR PAPERS

www.nmnh.si.edu/BIRDNET/PacBirds/

PAPER ABSTRACTS WILL BE POSTED ON THE PSG WEB SITE PRIOR TO THE MEETING

Contact Ken Brigg, of the local committee for additional information: E-mail: ktbriggs@hotmail.com Telephone: (925) 837-4264.

NEW EDITOR FOR PACIFIC SEABIRDS NEEDED

The Pacific Seabird Group seeks a new Editor for Pacific Seabirds, effective with the spring issue 2000 of Pacific Seabirds. The Editor is responsible for all aspects of the editorial process from working with authors and other contributors through copy editing, layout, printing and distribution. The Editor needs to actively seek contributions for Pacific Seabirds. The Editor is assisted by associate Editors for Conservation, Technical Manuscripts, meeting abstracts and regional reports. Experience with desktop publishing, and possession of appropriate software, is essential. Please contact the PSG Chair or Editor if you are interested in assuming the responsibilities of this position. A commitment of at least three years is desirable.

AMENDMENTS BALLOT RESULTS

A total of 27 ballots were returned from the membership. All proposed amendments to the Pacific Seabird Group bylaws were passed. See the last issue of Pacific Seabirds (Spring 1999) for text of amendments. The final tallies were (some ballots did not vote on all amendments):
1) Adopting California Voting Procedures: 25 approve, 1 dID not approve; 2) Endowment Fund: 25 approve, 2 do not approve; 3) Student Representative: 24 approve, 3 do not approve.

Kathy Kuletz, Secretary, PSG

ALBATROSS: BIOLOGY & CONSERVATION

I receieved a note from David Hutchinson who owns Flora & Fauna Books. He was apparently at last years meeting and folks asked him about the availability of a recent book from Australia about albatrosses. David now has the book in stock and wanted to announce the availability of it as follows: Robertson, Graham & Rosemary Gales, eds., Albatross: Biology & Conservation, 1998, Chipping Norton, NSW, pp300, Clothbound with DJ. Price $65.00, $5.00 UPS shipping, Washington residents must add $5.59 state sales tax. Available from Flora & Fauna Books, 121 First Avenue South, Seattle, WA 98104, Ph 206-623-4727, FAX 620-623-2001.

Roy Lowe

NEW MARBLED MURRELET TECHNICAL COMMITTEE COORDINATOR

Anne Harfenist has been appointed to replace Tom Hamer as the Coordinator of the Marbled Murrelet Technical Committee. Anne has been working on colonial waterbirds and seabirds for over 20 years, primarily for the Canadian Wildlife Service. She began as a wildlife toxicologist working on the Great Lakes, then progressed to a conservation biologist working on the marine birds of Newfoundland and British Columbia. She was chair of the National Marbled Murrelet Recovery Team from 1992-99. Tom has served PSG well as Coordinator since 1996; on behalf of PSG I'd like to express my thanks and appreciation for all that Tom has done as Coordinator the past four years.

Ed Murphy, Chair, PSG

PSG WEB SITE SEABIRD GALLERY NEEDS CONTRIBUTIONS

Images of seabirds of the world are needed for the PSG Seabird Gallery on the PSG web site. Images of birds flying, on the water, on nests, all age classes, colonies, and nest sites are needed. Sound recordings can be incorporate. Check out the site - contributors are identified.

CANDIDATE SPECIES LIST PUBLISHED

The US Fish and Wildlife Service published its list of candidate species in the October 25, 1999 Federal Register (starting 57,534). You can get it at this site:
http://www.access.gpo.gov/su_docs/aces/aces140.html It includes the Short-tailed Albatross and Harcourt's Storm-Petrel.

NEW WILLAPA NWR BIOLOGIST

Deborah Jacques has been selected to fill the Wildlife Biologist position at Willapa National Wildlife Refuge, Washington. This position was previously held by PSG member Don Williamson who retired. Craig Strong is moving his business to Washington.

SEABIRD BYCATCH SYMPOSIUM

The Seabird Bycatch Symposium Proceedings we are still in review mode, but hope to have it out in March-April 2000.

Ed Melvin

PSG ELECTION CANDIDATES

The following candidates have been nominated for positions on the PSG Executive Council for 2000. Included is the first candidate for the Student Representative. Please vote and return the enclosed ballot.
Chair: Bill Sydeman
Secretary: Lora Leschner
Alaska/Far East: Rob Suryan
Northern California: Kyra Mills
Hawaii and Pacific: Beth Flint
Old World: Mark Tasker
Student Representative: Louise Blight

SEADUCK SYMPOSIUM STATUS

The proofs of the symposium, Behaviour and Ecology of the Sea Ducks, Ian Goudie, Margaret Peterseen and Gregory J. Robertson (Editors), are now with Greg Robertson and should be printed before the end of the year. The symposium is being published by the Canadian Wildlife Service, Proceedings of the Pacific Seabird Group Symposium, Victoria, British Columbia, 8-12 November 1995. The Pacific Seabird Group appreciates the efforts of the Canadian Wildlife Service and the editors to complete the production and publication of this symposium.

SECOND INTERNATIONAL CONFERENCE ON THE BIOLOGY AND CONSERVATION OF ALBATROSSES AND OTHER PETRELS

The Ilikai Hotel, Waikiki, Hawaii
8-12 May, 2000

We are pleased to invite you to attend the Second International Conference on the Biology and Conservation of Albatrosses and Other Petrels. In 1995 the First International Conference on the Biology and Conservation of Albatrosses was convened in Hobart, Tasmania, Australia. A group of 120 participants came together to exchange scientific information on the biology and conservation of albatrosses. Ninety of those biologists, fisheries managers, and representatives of the fishing industry and non-governmental conservation organizations then participated in a workshop focused on the serious problem of albatross mortality in the worlds longline fisheries. The first meeting and workshop resulted in a publication that summarized the state of the art of research on the ecology of albatrosses and current knowledge about the scope and effect of the longline problem in addition to technical information about the methods available to reduce bird mortality in longline fisheries.

Participants in the first conference agreed to convene again in the year 2000, and Hawaii has been chosen as the site of this Second International Conference. The first conference and workshop succeeded in bringing together scholars representing a variety of research areas including systematics, population ecology, foraging ecology, physiology, and behavior. This forum also resulted in an assessment of the nature and extent of the fishery interaction problem, recommendations for mitigating measures that could be enacted by fisheries immediately, and identifying areas in need of further research and development. In the intervening years progress by the world community has been made on several fronts including international policy in the form of an IUCN Resolution concerning mortality of seabirds in longline fisheries passed in October of 1996 and an FAO Technical Consultation on the Incidental Catch of Seabirds in Longline Fisheries. The latter resulted in an International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries that was approved in June 1999. It is now an appropriate time for people to report on a number of their local initiatives such as research into efficacy of various mitigation techniques in the fisheries, progress in regulations and regulatory management of the problem, and studies on the population effects of fisheries on Procellariform birds.

This year the format of the conference will be expanded beyond just albatrosses to include other species in the Order Procellariiformes. Participants will present their work on breeding biology, foraging ecology, energetics, and population dynamics of albatrosses and all other petrels. Many members of this group, in addition to albatrosses, face pressing conservation problems due to introduced mammalian predators in their breeding colonies, global contaminants, as well as fisheries interactions. This gathering will provide a platform for presentations about advances in understanding the biology of all petrel species, allow participants to share technologies, and encourage them to plan for the best use of conservation resources to avert future petrel extirpations and extinctions. The agenda includes 3 days for presentation of scientific papers and 2 days for workshops on specific topics such as fishery interactions and island restoration techniques. These workshop sessions will allow smaller groups of people to work in a more flexible format. The organizers will arrange field trips which will provide opportunities to view a variety of central Pacific seabirds including the world's largest Laysan Albatross and second largest Black-footed Albatross breeding colonies at Midway Atoll. More information about the agenda will be posted on a conference website as it is finalized.

Organizing Committee: Beth Flint, David Duffy, Katie Swift, Pat Tummons

Call For Papers

We invite you to submit an abstract for an oral or poster presentation on Procellariform breeding biology, foraging ecology, energetics, physiology, population biology, systematics, genetics, conservation biology, fishery interactions, restoration ecology or any other topic you wish. Abstracts should be approximately 250 words (about half of a page. A copy of the registration form, one printed copy, and (if possible) one electronic copy in Microsoft Word or WordPerfect either on disk (label with your name and word processing program used) or by email (preferred) must be received by us **no later than January 30, 2000**. You will be notified of your placement on the program by 28 February, 2000.

Those interested in being included on the mailing list for announcements and instructions about this conference should send their name and address by e-mail or conventional mail to: Beth Flint, U.S. Fish and Wildlife Service, P.O. Box 50167, Honolulu, Hawaii 96850 USA Beth_Flint@fws.gov Phone: 808-541-1201, FAX: 808-541-121

SOUTHERN HEMISPHERE ORNITHOLOGICAL CONGRESS

27 June - 2 July 2000,
Griffith University, Brisbane, Australia

Birds Australia is presenting the 2nd Southern Hemisphere Ornithological Congress (SHOC) in Brisbane next year. This Congress aims to bring together Southern Hemisphere ornithologists from around the globe to discuss research and conservation of birds in a distinctly southern fashion. With plenary speakers and symposium organisers confirmed from Southern Africa, South America and

Australia, SHOC will be a truly international event. This major Congress will be held in Brisbane and hosted by the Queensland Ornithological Society. Eminent ornithologists will give six plenary addresses:

Plenary Addresses

Dr. Mark Burgman, AUSTRALIA: Population viability analysis for bird conservation

Dr. Alan Kemp, SOUTH AFRICA: Sustainability of avian populations

Dr Pablo Yorio, ARGENTINA: Seabird conservation

Dr. Eleanor Russell, AUSTRALIA: Avian Life Histories

Dr. Phil Hockey, SOUTH AFRICA: Southern approaches to migration

Dr Manuel Nores, ARGENTINA: Species richness in the Amazonian bird fauna from an evolutionary perspective

Symposia

As well open sessions, the programme includes the following symposia (Convenors as indicated):

Ratite biology

Threatened species recovery programs in the Southern Hemisphere: are they working?

Life history and ecology of Southern Hemisphere seabirds

Shorebird migrations between the hemispheres

Biogeography - Gondwanan radiations

Systematics of Southern Hemisphere groups

Birds on the edge: fragmentation and disturbance

Mating systems and cooperative Breeding - Morne du Plessis

Southern Hemisphere migration: mirror image or new paradigm?

Ecology of birds in human-dominated landscapes

Seabird conservation issues in the Southern Hemisphere - Steve Emslie

Southern perspective on avian life histories

Physiological correlates of avian life histories

Those interested in contributing to these symposia are invited to contact the convenors directly. Details of abstract formats required can be found at the SHOC 2000 website (http://www.birdsaustralia.com.au/shoc), as can registration brochures and all other information on the Congress. Information can also be obtained from the SHOC 2000 Congress Secretariat: Conventions Queensland, PO Box 4044, ST LUCIA SOUTH QLD. 4067. Phone: +61 (0)7 3870 8831; Fax: +61 (0)7 3870 9514; Email: shoc2000@conqld.org.au

Edward C. Murphy

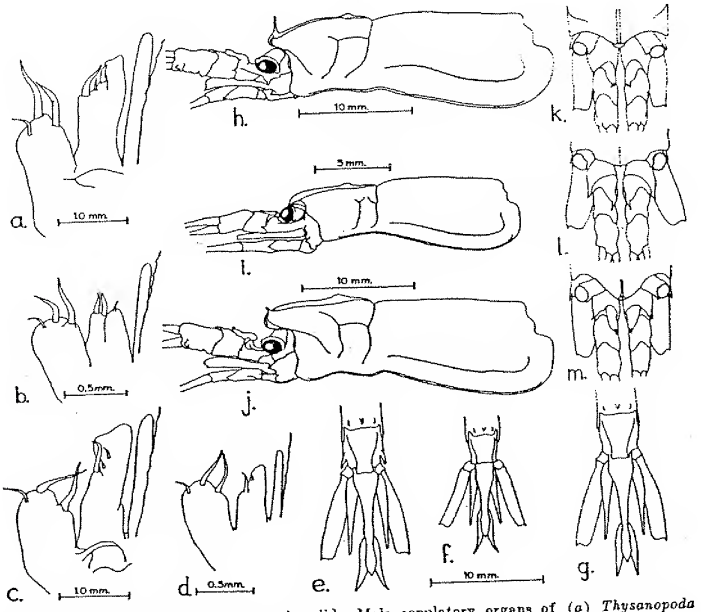


Fig. 9. The bathypelagic giant euphausiids. Male copulatory organs of (*a*) *Thysanopoda spinicaudata*, 104 mm. in length; (*b*) *Thysanopoda egregia*, 43 mm. in length; (*c*) *Thysanopoda cornuta*, 95 mm. in length; (*d*) *T. cornuta*, 50 mm. in length. Telson and uropods, in dorsal view, of the largest male specimens of (*e*) *T. spinicaudata*, (*f*) *T. egregia*, (*g*) *T. cornuta*. Lateral view of antennal peduncles and carapace of the same large specimens of (*h*) *T. spinicaudata*, (*i*) *T. egregia*, (*j*) *T. cornuta*. Dorsal view of frontal plate and antennal peduncles of the same specimens of (*k*) *T. spinicaudata*, (*l*) *T. egregia*, (*m*) *T. cornuta*.

[From, Brinton, E. 1962. The distribution of Pacific Euphausiids. Bulletin of the Scripps Institution of Oceanography of the University of California, La Jolla, California. Volume 8, Number 2, pp. 51-270, 126 figures in text.

REGIONAL REPORTS

Edited by *Elizabeth Flint*
Honolulu, Hawaii

ALASKA - RUSSIA

Summarized by *Rob Suryan*,

The Alaska Maritime National Wildlife refuge continued the ongoing program to reclaim habitat for seabirds by removing introduced foxes from refuge islands. Two of the largest islands restored so far were addressed in 1999. **Steve Ebbert** and **Jeff Williams** led crews who completed the removal of foxes from 92,000-acre Kanaga Island where eradication efforts began last year, and Steve's crews did the initial work to remove foxes from 224,000-acre Attu Island. **Leslie Slater**, assisted by **Barbara Blackie**, **Moe Flannery**, **Cliff Lascink**, **Alexis Paul**, and **Susan Hatch**, completed the annual seabird monitoring effort in southeastern Alaska where data were gathered on Fork-tailed & Leach's Storm-petrels, Pelagic Cormorants, Glaucous-winged Gulls, Pigeon Guillemots, Common & Thick-billed Murres, Tufted Puffins, and Rhinoceros Auklets. **Arthur Kettle's** crew continued fieldwork at East Amatuli in the Barren Islands as part of the Exxon Valdez Oil Spill APEX study. Species studied included Black-legged Kittiwakes, Common Murres, and Tufted Puffins. **Dave Roseneau** led a survey of Common Murre populations in the Barren Islands to determine if populations are recovering from the Exxon Valdez Oil Spill. **Susan Woodward** and **Becky Howard** continued the annual seabird monitoring project at Aiktak Island in Unimak Pass including storm-petrels, cormorants, gulls, murres, and Tufted Puffins. **Lisa Scharf** led the annual seabird monitoring project at Kasatochi where the focus is on cormorants, auklets, and murres. **Vernon Byrd** and **Jeff Williams** led surveys of kittiwakes, murres, and Tufted Puffins at Bogoslof Island where the response of various species to new habitat created when a new mountain peak rose from the ocean here in 1994 is of interest. **Vernon Byrd** and **Jeff Williams** surveyed storm-petrels and Cassin's Auklets at Ulak Island. **Jeff Williams** and **Lisa Scharf** surveyed kittiwakes at Koniuji Island. **Jeff Williams** and his crew continued the annual monitoring program for seabirds at Buldir Island focusing this year on storm-petrels, cormorants, kittiwakes, gulls, auklets, and murres. **Art Sowls**, **Tonja Bittner**, and **Rachael Schindler** led crews that continued the annual seabird monitoring projects at St. Paul and St. George Islands in the Pribilofs. The work in 1999 included population surveys, a triennial event here. Monitoring was focused on fulmars, cormorants, kittiwakes, murres, and auklets. **Ed** and **Nate Murphy** made a brief visit to Bluff in Norton Sound during early August to count and estimate breeding success of murres and kittiwakes on long-established plots, as part of the annual seabird monitoring program. **Dave Roseneau** and **Don Dragoo** continued the annual seabird monitoring at Cape Lisburne in the Chukchi Sea. They focused on kittiwakes and murres. **Kevin Bell** and others aboard the M/V Tiglax continued to record unusual observations of seabirds during the course of their travels. Noteworthy observations included several sightings of Short-tailed Albatrosses and a South Polar Skua.

David Irons and **Kent Wohl** continued the annual seabird monitoring work at Little Diomede Island in the Bering Strait. **Laura Greffenius** conducted the field work and was assisted by **Neil Gilbert**, **Victor Zubakin**, and **Marlene Ahkinga**.

Rob MacDonald and staff with Togiak National Wildlife Refuge monitored the population and productivity of Black-legged Kittiwakes, Common Murres, and Pelagic Cormorants at Cape Peirce in 1999. The camp was opened on 5 May with seabird monitoring occurring from about 6 May to 4 September. In addition, predation and disturbances to seabirds were recorded and beached bird surveys were performed. Staff at Togiak NWR has monitored the population and breeding performance of kittiwakes, murres and cormorants from shore-based plots at Cape Peirce annually since 1984. The average number of Black-legged Kittiwake adults and nests on all plots were low and breeding performance parameters were very poor, with a total reproductive failure. The average number of common murre adults on all plots were low and breeding performance parameters were mixed with some results above and below average. Pelagic cormorant adult and nest numbers were about average and breeding performance parameters were also mixed.

Ian L. Jones and **Fiona M. Hunter** continued their research on auklets on Buldir Island in the western Aleutian Islands. Their work was in collaboration with **Jeff Williams** of the U.S. Fish and Wildlife Service, Aleutian Islands Unit. **Allison Veit** and **Nicole Winter** spent the summer on Buldir Island conducting field work.

Nikolai Konyukhov with the Russian Academy of Sciences in Moscow also spent the summer on Buldir Island. Nikolai was continuing his studies of auklets.

Scott Hatch, **Verena Gill**, and **Rick Lanctot** continued field research on Middleton Island in 1999, including a supplemental feeding study of Black-legged Kittiwakes. In addition to measuring basic breeding parameters, a series of blood samples was collected from fed and unfed adults this year to evaluate corticosterone as an indicator of food stress. New construction was undertaken on the tower colony on Middleton that may allow extension of this work to pelagic cormorants in the future. The use of decoys and vocal playback was successful in attracting common murres to a rooftop that we hope will be used for breeding in future years. Four volunteers, **Amy DeLorenzo**, **Pete Warzebok**, **Alex Wilke**, and **Jason Yakich**, assisted with these studies from 10 May through 26 August. Fifty common murres were captured on Middleton Island in May and transported to the Alaska SeaLife Center in Seward for experimental evaluation of attachment methods for satellite and conventional radio transmitters. This work is being conducted collaboratively by **Scott Newman** of UC Davis, **Scott Hatch**, and **Susan Inglis** of the SeaLife Center. **Dan Mulcahy** (USGS, Anchorage) assisted with the surgical implantation of satellite transmitters. **Charla Sterne** and **Scott Hatch** are proceeding with development of a website and user access system for the Pacific Seabird Monitoring Database. ESRI (Environmental Systems Research Institute, Inc.) was contracted this year to

develop GIS and server software needed to distribute data efficiently via the Internet.

Crews with the Alaska Predator Ecosystem Experiment (APEX; funded by the *Exxon Valdez* Oil Spill Trustee Council) completed their fifth and final field seasons in Prince William Sound (PWS) and lower Cook Inlet. The APEX project is still being led by **David Duffy**.

William Ostrand and **Tracey Gotthardt** with the Seabird/Forage Fish Interactions component of APEX conducted work in Prince William Sound, Alaska, this past summer. Bill conducted a hydro-acoustic survey of forage fishes while Tracey simultaneously collected seabird location data. They also collected bottom sediment samples from randomly selected locations. The hydro-acoustic data will be used for two purposes: 1) As an independent measure of forage availability used to explain seabird nesting performance that is being determined by APEX colony studies, and 2) to be used in conjunction with seabird location data to describe forage selection by birds at sea. The bottom sediment samples will be used in the development of a Pacific sand lance habitat selection model.

Kathy Kuletz wrapped up the last field season of the marbled murrelet restoration study as part of APEX, monitoring murrelet productivity in Prince William Sound. **Karen Brenneman** returned for her third year on the study and was joined by **Greg Spencer** and **Randy Mullen**, with occasional help from **Joe Meehan, Michelle Morseth, Steve Kendall,** and **Debbie Wong**. The season began ominously with almost no murrelets in the study areas in June. As the season progressed and other local seabirds failed in nesting attempts, we were about to declare it a loss when adult murrelets returned to nearshore waters and juveniles began to appear just a week later than usual. In the end, juvenile murrelet densities were not much lower than in previous years, but some murrelets in southwest PWS were holding fish for chicks in early September, suggesting very late nesting and fledging under less than ideal conditions. As usual, murrelets fed on herring and sand lance, with regional differences. In addition, capelin made a strong showing in early August. More effort was put into standardized foraging observations, which hold some promising comparisons between adults foraging in midday (presumably for themselves) vs. early morning or late evening (possibly for chicks). As the fish data come in, Kathy will be analyzing the 1994-99 data to examine changes in murrelet productivity among areas and years, and relative to fish distribution and abundance. Results will be incorporated into her Ph.D. thesis (University of Victoria, BC), which she is working on under the supervision of **Alan Burger** (working in the Seychelles this year). While Kathy works on data and writing this winter, **Karen Brenneman** will be leaving for Baja to work on Brant geese for USGS/BRD and **Greg Spencer** will be working with **David Ainley** in Antarctica. Hopefully, Karen and Greg will return for the winter surveys of Prince William Sound in March 2000, and Alan will return refreshed and tan.

David Irons and **Rob Suryan** completed their final field season of APEX work on the population and reproductive biology and foraging ecology of Black-legged Kittiwakes in Prince William Sound (PWS). This was one of the worst years on record for kittiwakes in PWS with delayed nesting and very low laying and fledging success. Regional variation in chronology, reproductive success, and foraging effort was observed, but not as pronounced as in other years. Early season prey populations seemed poor and may explain reduced breeding attempts. Additional studies this year included radio-tracking breeding adult kittiwakes during the period between injection of doubly-labeled water (dlw) and subsequent blood sampling. **Dan Roby, Pat Jodice, Kathy Turco, and Ryan Wilhite** conducted the dlw work. Crews also completed a second season of radio tracking during concurrent aerial mapping of forage fish schools by **Evelyn Brown** (University of Alaska Fairbanks) and pilot **Tim Veenstra**. Radio tracking and overflight data are used by the APEX modeling component (**Glenn Ford, David Ainley**, and **David Schneider**). Field work was conducted by **Marcus Bradley, James Hall, Justin Harth, Stephani Holzwarth, Max Kaufman, Laura Kennedy, Jonel Kiesau, Brian Lance, Casey Lott, Laura Minich, Teresa Sauer, Rob Suryan, Tansy Wagner,** and **Anne Weiland**. With the help from **Jeb Benson** and **April Nielsen, David Irons** also continued monitoring Black-legged Kittiwake colonies in Chiniak Bay on Kodiak Island.

Greg Golet finished his Ph.D. work on the cost of reproduction of Black-legged Kittiwakes by defending his dissertation this fall at U.C. Santa Cruz. Greg and crew also completed their final season of pigeon guillemot studies, a component of APEX in Prince William Sound.

John Piatt's Cook Inlet Seabird and Forage Fish Study (CISeaFFS) completed its fifth field season with funding and logistic support from the USGS, EVOS Trustee Council (APEX), USFWS and University of Alaska Fairbanks. John and crews also conducted work this year in Glacier Bay.

Bob Day and **Debbie Nigro** completed data analysis, the final report, and publications on the Kittlitz's Murrelet project in PWS. **Bob Day** continued collecting data on at-sea distribution of seabirds in the northern Gulf of Alaska with respect to oceanography. Emphasis of this project is on wintering birds with two more cruises this year.

Michele Miller continues to work as an aviculturalist at the Alaska Sealife Center in Seward. Her work primarily involves husbandry of birds in the seabird exhibit. During the busy summer months, however, she was also involved with caretaking of captive seabirds used in research projects and rehabilitation of species ranging from Pine Siskins to eagles.

Kim Rivera reports that the issue of seabird bycatch in longline fisheries was raised by National Marine Fisheries Service (NMFS) for the first time on the agendas of the US-Russia Bilateral Fisheries Meeting in January and the US-Taiwan Bilateral Fisheries Meeting in July. NMFS and U.S. Fish and Wildlife Service (USFWS) staff both in Alaska and Headquarters have been involved from the beginning stages of the Food and Agriculture Organization's (FAO) "International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries" (IPOA-Seabirds); this effort has now shifted focus to the development of the US's National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries. Alaska contacts are **Kim Rivera** (NMFS) and **Kent Wohl** (USFWS). First preliminary bycatch estimates of seabirds taken in the Bering Sea/Aleutian Islands (BSAI) and the Gulf of Alaska (GOA) groundfish hook-and-line fisheries were calculated in a joint effort by USFWS (**Bob Stehn, Kent Wohl, Greg Balogh**) and NMFS (**Kim Rivera** and **Shannon Fitzgerald**). Total estimated annual mortality of seabirds in the Alaskan hook-and-line groundfish fisheries was 14,000 birds between 1993

and 1997, approximately 83% of the take occurred in the Bering Sea and Aleutian Islands (BSAI). The estimated bycatch rate was 0.090 birds/1000 hooks in the BSAI and 0.057 birds/1000 hooks in the GOA. Northern Fulmars represented about 67% of the total bycatch of all bird species, gulls 18%, Laysan Albatrosses 5%, and Black-footed albatrosses_4%. NMFS awarded a Saltonstall-Kennedy Grant to **Ed Melvin** of the Washington Sea Grant Program (WSGP) to conduct research in 1999 and 2000 on the effectiveness of seabird avoidance measures in the North Pacific longline fisheries. NMFS is preparing a proposed rule that would revise the current regulations that require the use of seabird avoidance gear and methods in the hook-and-line fisheries off Alaska (groundfish and halibut). The North Pacific Fishery Management Council recommended that some revisions be made with the intent of improving the effectiveness of the measures being currently used. Beginning in 2000, observers on longliner vessels will record what seabird avoidance measures are being used on a haul-by-haul basis. This will allow some measure of the effectiveness of these measures in that bycatch on hauls can be related to the avoidance measure being used. Progress is being made on a feasibility study that will consider various options for monitoring seabird bycatch in the Pacific halibut fishery. Currently, halibut vessels have no specific requirements for observers and information on seabird bycatch is collected from vessels by port samplers with the International Pacific Halibut Commission (IPHC); some of the vessels have at-sea observers though because of the groundfish fishing that they are also doing. Continued outreach to the longline industry and the public regarding the seabird bycatch issue and effective ways to reduce the bycatch. This includes a seabird link to the NMFS Alaska Region home page at http://www.fakr.noaa.gov/protectedresources/seabirds.html

The Ecological Services branch of the Fish and Wildlife Service continued their work with issues involving Short-tailed Albatross, seabird bycatch, and Spectacled Eiders. **Janey Fadely** worked on preparing a final rule on the proposal to extend endangered status for Short-tailed Albatrosses to include the United States (final rule is expected in November). Janey was also involved with completing a formal section 7 consultation with the National Marine Fisheries Service on the effects of groundfish longline fishing on the endangered Short-tailed Albatross. The consultation maintained that the anticipated level of take remains unchanged from the previous period of consultation (4 birds in 2 years). **Greg Balogh** continues to expand the database of Short-tailed Albatross encounters by vessels at sea. Thanks to the help of the National Marine Fisheries Service, the North Pacific Longliners Association, and the International Pacific Halibut Commission, they now have widespread distribution of the Short-tailed Albatross encounter reporting form, and receive a number of encounter reports per month. The data are used to periodically update a database of albatross encounter reports. Greg and others in the Anchorage Field Office obtained a private lands initiative grant to supply longline fishermen with seabird deterrent devices free of charge (paired tori lines). The objective of the project is to reduce seabird bycatch in Alaska's fisheries by increasing the use of the most effective seabird deterrent methods. Greg also continues to provide seabird training to domestic fishery observers. In addition to albatross and seabird bycatch issues, Greg and Anchorage Field Office personnel are re-addressing the issue of whether to propose critical habitat for spectacled eiders, including marine habitats in the Bering and Beaufort Sea. Considerable effort is being spent addressing a lawsuit that has been filed against the Fish and Wildlife Service over its failure to designate critical habitat for spectacled and Steller's eiders at the time these two species were listed.

In Prince William Sound (PWS) **D Ainley, G. Ford** and **D. Schneider** begin the third year of an effort to model recovery, or lack thereof, among species affected by the Exxon Valdez Oil Spill. Their target species in PWS are Black-legged Kittiwake, Pigeon Guillemot and Marbled Murrelet. The project involves close coordination with other Principal Investigators in the multi-investigator APEX project (Alaska Predator Experiment) headed by **D. Duffy.**

CANADA

Summarized By *Ken Morgan*

British Columbia

Alasdair Beattie (Univ. of British Columbia [UBC]) - The issue of fisheries discards has become one of increasing concern over the last few years. While landings have approached the 100 million tonne range, it is estimated that a further 25-30% of that total is discarded at sea. Such levels of harvesting and discarding must have some, probably detrimental, effect on the ecosystems. However, until recently there were few reliable tools with which to perform an assessment of an entire ecosystem. My research, under the supervision of **Daniel Pauly** (UBC) will model the interaction between seabirds and trawl vessels. The specific focus will be the identification and counting of gull species, and estimating their consumption of discards from trawl vessels. This data will be used to model possible changes in the population and community structure of seabirds in general. Modeling will be done using Ecopath; a mass balanced trophic ecosystem modeling software, and related components (Ecosim, dynamic modeling and Ecospace, spatially explicit).

Louise Blight (Simon Fraser Univ. [SFU]) - I continued my MSc research at Triangle Island. During this second season of field work, I again collected data on Rhinoceros Auklet egg predation by native mice, with the intent of looking at inter-annual trends in egg depredation rate. Research included the use of miniature temperature loggers inside artificial eggs to ask how parental egg neglect is related to observed patterns of predation. Egg chilling experiments were also carried out this year.

Alan Burger (Univ. of Victoria) summarized the Marbled Murrelet projects on Vancouver Island. - Inland surveys were made in the Carmanah Valley for the 10th consecutive year to track annual variability and relate these to ocean conditions. **Anne Stewart** continued at-sea surveys in Barkley Sound for the 6th consecutive summer. A new program to compare murrelet activities in shoreline forests with those further inland was initiated by **Volker Bahn** and **Angeline Tillmanns** in the Klanawa region of Pacific Rim National Park. Surveys aimed at documenting murrelet nesting in Douglas-fir forests of SE Vancouver I. continued with **Anna Young** leading the field crew. **Sharon Dechesne** completed her MSc on vocalization and individual recognition of Marbled Murrelets. **Michelle Masselink's** thesis is nearing completion and deals with the distribution and density of Steller's Jays within Marbled Murrelet nesting habitat. While his crews sweated the murrelet work, **Alan Burger**, accom-

panied by Andrea Lawrence, went on sabbatical to the Seychelles for a year to develop seabird monitoring programs for BirdLife Seychelles (Someone had to do the tough work).

Trudy Chatwin (BC Ministry of Environment, Lands and Parks) - Apparent population declines of Double-crested Cormorants in the Strait of Georgia lead **Ian Moul** to survey colonies and examine potential causes of decline. Results show a drop from 1,500 pairs (1995) to less than 500 pairs in 1999. Possible causes are increased eagle activity, declines in fish prey and human disturbance. The following was taken from the abstract from the 1999 "Species At-Risk" paper. Clayoquot Sound (CS) may support one of the largest concentrations of breeding Marbled Murrelets in North America. The goals of our studies are to quantify the importance of CS to Marbled Murrelets. Over the last 4 years we used a variety of techniques: boat surveys to estimate numbers and marine distribution; high frequency radar to count murrelets entering watersheds; standard audio-visual surveys (177 stations); and tree climbs (240 randomly selected trees) to determine habitat preferences. Based on radar counts, the population in CS was estimated to be between 6,000 and 8,000 birds. High radar detections in a watershed correlated with size of watershed and amount of remaining valley-bottom timber. Forest ecosystem classification and detection data were used in a GIS mapping analysis to rank and map habitats of importance throughout CS watersheds. Three nests were found in Sitka spruce, 2 in western red cedar and 1 in an amabilis fir. Results suggest that Marbled Murrelets nest in low densities in undisturbed West Coast watersheds. Habitat suitability and nesting density information continues to be used in the planning processes to delineate protected habitat and management zones for Marbled Murrelets in CS and other coastal areas of BC. Broad Ecosystem Unit (BEU) and forest cover were mapped to aid the Central Coast Land and Coastal Resource Use planning table. We ranked BEU and forest cover polygons based on their suitability for murrelet nesting habitat. We conducted reconnaissance level surveys of 27 watersheds along the Central Coast, using high-frequency radar to count murrelets as they entered the watersheds (pre-dawn). From these counts we calculated an index of the number of nesting murrelets per hectare of suitable habitat; the index was used to rank the suitability of the watersheds and to delineate broad areas for further examinations of nesting. We estimate 21,000 birds use the Central Coast study area. Conflicts over forest development plans and results from these studies lead to the development of a habitat based assessment procedure for prioritization of areas for protection. The "step-down" method begins with the assessment of forest cover maps to identify large areas in older age classes and higher height classes. Areas are outlined; aerial photographs are interpreted; stands are preliminarily ranked; assessed for nesting platforms (by ground surveys or helicopters) and then using activity surveys, assessed for potential suitable nesting areas. The method was developed in conjunction with **Dave Lindsay** (Timberwest), **Sally Leigh-Spencer** and Forest Ecosystem Specialists **Judy Teskey** and **Connie Miller-Retzer**.

Mark Drever (SFU) - **Sean Cullen, Ronnie Drever, Stephanie Hazlitt, Yolanda Morbey** (and Mark) returned to Langara Island to evaluate the response of land and seabird communities to the rat eradication that took place in 1995. We monitored for rats and raccoons on Langara, Cox, and Lucy Is. and found none. The overall number of Ancient Murrelets in the colony (last surveyed in 1993 by **Anne Harfenist** and crew) continued to decline. However, the total area covered by the colony has increased. The colony has primarily expanded towards the coast, where rats occurred in highest densities. This is consistent with the continued predation by rats on murrelets between 1993 and 1995, and then subsequent recovery following rat eradication.

John Elliott (CWS) - CWS staff **Sandi Lee, Laurie Wilson** (and John) continued the regional component to the CWS national monitoring program for contaminants in seabird eggs. During the 1999 breeding season Rhinoceros Auklet eggs were collected from Lucy Island and Leach's Storm-Petrel eggs from Hippa Island. During the visit to Hippa Island, we noted very low burrow occupancy for Leach's Storm-Petrels; occupancy recorded on the 1-day visit (July 5) was 21 % (N=67 burrows checked). This is much lower than an average of 70% recorded at egg collection visits in1991 and 1995. Fork-tailed Storm-Petrels without eggs or young were also found in burrows during that visit; this species had not previously been found attempting to breed in July, on Hippa Is.

Carina Gjerdrum (MSc student, SFU) - Triangle Island supports 80% of BC's Tufted Puffin population. Between 1994 and 1998, Triangle I. puffins produced virtually no young, with adults leaving before the minimum time required to raise a nestling to independence. Using a life history perspective, my primary research objective was to measure variation in timing of nestling desertion and to relate that to nestling growth rate and adult provisioning behavior. An additional objective was to increase the benefits of a provisioning trip experimentally by increasing offspring quality. To do this I supplemented the diet of a group of nestlings in order to increase their growth rate and perhaps influence the adults' reproductive decisions. Unexpectedly, in 1999, the Triangle I. puffins succeeded, with over 80% fledging success. Measurements were taken for approximately 80 nestlings from hatch to fledge and detailed observations were made on those same burrows to determine parental provisioning behavior. We intercepted a number of bill loads to determine prey composition and size throughout the breeding season; preliminary results show an abundance of Sandlance. Although unanticipated, the successful breeding season allows me to examine the variation observed in adult provisioning rates, nestling growth, and fledging behavior.

Cindy Hull (Centre for Wildlife Ecology, SFU) summarizes the Marbled Murrelet research at Desolation Sound (DS). - The 9th season of research at DS was just completed. This is a collaborative project between the Centre for Wildlife Ecology and the Canadian Wildlife Service (CWS), that includes **Sean Boyd, Russell Bradley, Fred Cooke, Mark Drever, Gary Kaiser, Cecilia Lougheed, Lynn Lougheed, Irene Manley, Laura McFarlane-Tranquilla, Brett Vanderkist**, (and Cindy). There are 2 main objectives: 1) to understand the population dynamics of Marbled Murrelets in DS, and 2) to better understand the marine and forest habitat requirements. We conducted capture/mark/recapture studies, examined the birds' endocrinology, marine and forest habitat use, and nest site and habitat descriptions. Using radio telemetry we found a minimum of 35 active nests and established the breeding status at these (2-year total 58 nests). **Russell Bradley** (MSc student) is looking at habitat variables of each nest site and comparing these variables to availability. Radio te-

lemetry provided information on inter-annual differences in the duration of the breeding season at this site. We were able to clarify the use of flyways and found that murrelets use high elevation passes to commute between foraging areas and nest sites. Radio telemetry was used to compare the behavior of breeding and non-breeding birds and better understand prospecting of forest habitat by birds not currently breeding. **Cecilia Lougheed** (MSc student) has been studying the use of marine areas by murrelets using telemetry. Capture/mark/recapture studies are providing our first preliminary estimates of the population size and status at DS. We have developed and regularly use a molecular sexing technique, which has been validated against dissected murrelets. Endocrinology studies have found that the egg yolk precursors vitellogenin and very-low density lipoprotein are useful indicators of egg-production in Marbled Murrelets, with more robust results obtained when both precursors are used. **Laura McFarlane** Tranquilla (MSc student) is using these precursors, and prolactin and corticosteroids in males, to examine the chronology and inter-annual variability in breeding, and factors affecting the male biased sex ratio found at one site in DS. This year we saw the completion of an extensive project by **Irene Manley** examining nest site and habitat descriptions of Marbled Murrelets at the study site. As DS has undergone extensive habitat modification through forestry, radio telemetry was conducted at a second site (Mussel Inlet) to make comparisons of habitat use and breeding success with DS. Twelve active nests were found (see report by **Gary Kaiser**).

Paul Jones writes on behalf of Marbled Murrelet projects conducted by the Friends of the Caren Range. - Marine and forest habitat studies continued in 1999 in Middlepoint Bight and on the Caren Range; this was the 9th year of studies. Exceptional snow levels in the Caren delayed forest studies to the latter half of July. Detections in July were lower (by 30%) than normal, but many birds were observed using 2 (of 3) roads to access the forest. Three tree landings were noted. In Middlepoint Bight marine studies continued from April through late September. Numbers were 20% lower than normal and only a single juvenile was seen in early July. During the August/September molt, the maximum number (23) was slightly lower than previous years.

Gary Kaiser (CWS) - A radio telemetry pilot project on Marbled Murrelets nesting in a nearly pristine portion of the Central Mainland Coast came up with unusual results. Sixteen birds were tracked to 12 nest sites but instead of being spread over a large area, all nest sites were in the catchment of Mussel Inlet. All were in an area characterized by a high percentage of alpine and subalpine, steep rock faces, and small trees (<10m). The nest sites were between 108m and 800m elevation. None of the birds were in adjacent patches of riparian forest with large trees or in a nearby stand (5,000ha) of "classic old-growth" with trees taller than 30m. Most of the nest site stands included large snags and trees with mossy pads. One site consisted of a steep rock face with a small patch of willows and sedges in the centre, no trees at all, and constitutes the first evidence for ground nesting in Canada. Unfortunately this and the other sites were inaccessible so there is only the indirect evidence of repeated telemetry detections over 5 weeks to support incubation.

Hugh Knechtel successfully defended his MSc thesis ("Effects of age, gender, and condition on the reproductive effort of Cassin's Auklets [*Ptychoramphus aleuticus*] on Triangle Island, British Columbia" in Dec. 1998 at SFU. He was on Triangle in March '99 to set up the field camp and to begin data collection. In May he moved to DS where he supervised the Marbled Murrelet crew involved in mist-netting and dip-netting efforts.

Deborah Lacroix (MSc student, SFU) - Early work on mussel bed community structure suggested that sea stars were the dominant species regulating the dynamics. However, recent studies indicate that other mussel predators, such as sea ducks, may be equally dominant. The distribution and abundance of the Surf Scoter coupled with its diet and foraging behavior, suggest that the species may have a significant role in mussel bed communities. In fall 1998 I began to examine the ecological role of Surf Scoters in temperate rocky intertidal zones. The first year's research objective was to investigate the distribution and foraging behavior of Surf Scoters in Howe Sound. Preliminary results indicate that scoters distribute themselves in large discrete flocks (of 50 to 1000 individuals) and are typically found in sheltered rocky areas. Results from a stomach analysis (20 birds) demonstrated that mussels comprised over 90 % of food items ingested. The gregarious behavior of this species coupled with a high energetic requirement was found to result in large-scale, systematic depletions of mussel beds. This fall I will continue to focus on the relationship between Surf Scoter distribution and mussel bed depletion. In addition, I will investigate the mechanism permitting large flocks to be supported by a depleting resource using simulation models and field experiments.

Irene Manley - This was the first year of a Marbled Murrelet inventory and population assessment on NW Vancouver Island. **Trudy Chatwin** led the project, funded by the Nestucca Oilspill trust fund. The objectives are to estimate murrelet populations in major watersheds using radar surveys and to identify important marine feeding areas with at-sea transect data. Surveys were carried out in Nootka Sound, Kyuquot Sound, Brooks Peninsula and Quatsino Sound. **Irene** and **Catherine Conroy** conducted field work between 15 May and 15 July. Data analysis is now underway. Preliminary results from radar counts found a total of 6,075 murrelets incoming to 30 watersheds surveyed, with highest counts at the Klashkish/East Ck., Tashish/Artlish, Leiner and Power watersheds.

Ken Morgan (CWS) continues to coordinate at-sea surveys to monitor the variability of pelagic seabirds as related to oceanographic conditions and prey availability. Contractor **Mike Bentley** completed the 8th offshore survey (since 1996) along a repeated 1,500 km transect, tracking the response of birds to the development and collapse of the '97/'98 El Nino, and recent La Nina conditions. **George Hunt Jr.** (Univ. of California, Irvine), **Pat Gould** (US Geological Survey, retired) and Ken finally completed a 3-year project to derive estimates of seabird numbers (during summer) and quantities of prey consumed within each of 14 oceanographic realms of the North Pacific. This chapter will form part of the report on the "Consumption of marine resources by seabirds and marine mammals" and will eventually be published by PICES (= North Pacific Marine Science Organization). Collaborating with **Doug Bertram, Sean Boyd, Dave Mackas** and **David Welch**, **Ken** coordinated the at-sea surveys of seabirds near Triangle I. by observers **Mike Bentley** and **Mike Force**. Ken is also gathering data (through the Department of Fisheries and Oceans' [DFO] fisheries observer program) on the extent of seabird bycatch in BC commer-

cial fisheries. Although preliminary, it appears that Common Murre are the dominant species killed in net fisheries.

John Ryder (SFU/CWS) summarizes Triangle Island work. - This was the 6th year of collaborative seabird monitoring under the auspices of the Wildlife Ecology Research Chair (Fred Cooke) at SFU and CWS. **Doug Bertram** completed his 4th year as project coordinator and director of research on 4 alcid species (Cassin's Auklets, Rhinoceros Auklets, Tufted Puffins and Common Murres). John completed his 3rd year as camp manager and Carolyn Yakel assumed this role later in the season. **Hugh Knechtel** returned to Triangle I. in March for a few weeks to help with monitoring efforts. **Moira Lemon** (CWS) visited in August to survey the permanent monitoring plots (first established 1984). Other research assistants and volunteers **included Scott Norris, Kathryn Lansley, Dania Lemieux, Gregor Yanega**, and **Boyd Pyper**. The Triangle I. program is also closely linked to DFO researchers (**Dave Mackas** and **David Welch**) interested in variations in marine prey (zooplankton and fish) and predator populations (seabirds and salmon) around Triangle. Radio telemetry was used to examine the foraging ecology of Cassin's Auklets. The project was supported by the NESTUCCA Oil Spill Trust Fund and by the Canadian Nature Federation (Important Bird Area research). Transmitters were affixed to 39 adults during the chick rearing period and **Sean Boyd** (CWS) conducted 4 aerial surveys to locate radio-tagged adults at sea. The auklets were found foraging at considerable distances southwest of the colony, seaward of the continental shelf break. As in previous seasons, we examined the phenology, reproductive performance, nestling diet and development, provisioning, and attendance patterns of the 4 alcid species. We also continued the mark/recapture banding program to examine the demography of Cassin's and Rhinoceros auklets. **Moira Lemon** reported that the density of Cassin's burrows had declined since the previous survey ('94), and that the burrow density of Rhinoceros Auklets and Tufted puffins was similar to '94.

Joanna Smith writes that she is working with **Ken Morgan** (CWS) to assess seabird bycatch concerns in BC's commercial fisheries. Joanna developed a manual and taught fisheries observers how to identify seabirds during training sessions in Victoria. The seabird bycatch issue is being examined cooperatively with the DFO, with the goal that all fishing sectors will eventually have some seabird ID training to collect seabird bycatch data more accurately. To date, the trawl and salmon gillnet fishery have taken part in the training.

Arctic

Grant Gilchrist (CWS) - Little is known about Common Eider population dynamics; recent surveys in Greenland indicate dramatic population declines have occurred since the 1970s. East Bay, Southampton I. supports one of the largest Common Eider colonies in the Canadian Arctic. A long-term research project has been initiated here to collect information on adult survival and reproduction, and the factors affecting these parameters. The project (**Grace Bottitta**, Trent Univ. and Grant) will generate the first experimental and behavioral data on the affects of energy reserves on eider annual fecundity in the Canadian Arctic. Other studies (with Grant as principal investigator) include the influence of internal parasites, heavy metal contaminants (**Mark Wayland**, CWS), and Herring Gull and Polar Bear predation (**Karel Allard**, Univ. of New Brunswick) on adult survival and annual reproduction. The northern race of the Common Eider (*Somateria mollissima borealis*) is subjected to heavy subsistence and sport harvest throughout its breeding, staging and wintering grounds and is also vulnerable to oil spills. Reliable data on their population status does not exist and few key sites have been identified. The southern coast of Baffin I. likely supports a significant proportion of the eider's breeding population in the eastern Arctic, however little is known about the status of the population breeding along the coastline. **Grant, Bill Barrow** (CWS) and **David Kay** (Ducks Unlimited, Canada) conducted aerial surveys and ground searches of island nesting colonies between Cape Dorset and Kimmirut ('97-'99). This study provides the first reliable estimate of the common eider population in this area and identifies key breeding sites. Hudson Bay Eiders (*S. m. sedentaria)* winter in open water leads near the Belcher Is. and off the west coast of Quebec. This is one of the only waterfowl species in the world that spends the entire year in Arctic waters. Mass die-offs occur in winter when large proportions of the population are concentrated in open water leads that sometimes freeze. This study examines habitat use, body condition, and diet of King and Common Eiders wintering in the Belcher Is. (Nunavut) during 3 consecutive winters. Field data will be integrated in a spatial model to examine the vulnerability of sea ducks to winter kill based upon historical tidal, sea ice, and weather data from the region (**Greg Robertson**, CWS, and Grant). The Sabine's Gull occupies an interesting ecological niche because it feeds in a variety of marine and freshwater habitats. This study monitors long-term population densities of Sabine's Gulls at East Bay and identifies factors influencing annual population variation and reproductive success. Survival rates and mate and nest site fidelity will also be determined (**Ian Stenhouse**, Memorial Univ. and Grant). In the late '70's and early '80's, population monitoring began at several eastern arctic seabird colonies. By comparing the populations of study plots over time, population increases or decreases of selected Thick-billed Murre, Northern Fulmar, and Black-legged Kittiwake colonies are monitored. Study plot assessment occurs at five-to-ten year intervals, rotating among colonies (**Tony Gaston**, CWS and Grant).

Saskatchewan and Ontario

Ted Leighton (Canadian Cooperative Wildlife Health Centre, [CCWHC] Univ. of Saskatchewan) writes that he, along with **Thijs Kuiken** and **Gary Wobeser** (CCWHC) and **Dan Frandsen** (Parks Canada) have been involved with the following projects. An intensive study of causes of mortality at a Double-crested Cormorant colony in northern Saskatchewan was done from 1994-96 and a less intensive long-term monitoring program on this and another colony site (100 km southeast), has been pursued from 1996 to the present. The focus has been Avian Paramyxovirus 1 (PMV-1: cause of Newcastle disease) which occurred on these colony sites in 1995, 1997 and 1999 (although the identity of the1999 virus is not yet confirmed). Mortality from PMV-1 has been detected at these colony sites as early as mid-July, but appears to peak a few weeks later and to cause the highest mortality among fully-grown young of the year. Post-epidemic (mid-August) carcass counts of 1,000 to 2,000 have been typical at a colony site with about 10,000 breeding pairs of cormorants. The carcass counts probably represent half or less of the total mortality. We hypothesize that in nesting colonies there is a short period during which contagious disease can

spread efficiently among young-of-the year cormorants, beginning when they leave the nests and ending with dispersal. We further hypothesize that this period of contagion begins earlier and is longer in ground-nesting colonies than in tree- or cliff-nesting colonies (because young leave ground nests earlier than from tree or cliff nests) and that the effect of such diseases on populations will differ according to dominant nest type.

Martin Damus (Queens Univ.) - I have been investigating genetic diversity and population structure among colonies of Thick-billed Murre. Using sequencing of the 5' end of the mitochondrial control region, I have been able to identify ocean-specific haplotypes. Nearly all individuals caught in the Pacific Ocean, including Bering Strait, far eastern Russia and western Canada (Cape Parry) have the 'Pacific' type, while those from the eastern Canadian Arctic through to the New Siberian Is. are of the 'Atlantic' type. Some individuals of the 'Atlantic' type were collected from Pacific regions, possibly indicating post-glacial gene flow. No 'Pacific' types were found in Atlantic regions. Indications from microsatellite analyses suggest very low rates of inter-colony migration (and subsequent gene flow) in the Atlantic area. What gene flow that is indicated seems to follow biologically plausible causes. There is significant gene flow from Coats I. (western Hudson's Bay) to colonies to the east (Akpatok and Gannet Is.), and from Akpatok (northern Quebec) to Gannet I. (Labrador coast).The data do not support gene flow in a westerly direction. Given that all birds from these 3 sites overwinter off Newfoundland, it is possible that those from Coats I. stop at 1of the other 2 colonies on the spring migration, but it is not likely that a Gannet I. bird would fly further than usual and find Coats I. A comparative study of the common murre (Uria aalge) has just begun.

Leah de Forest (Canadian Nature Federation [CNF]) - The Important Bird Areas (IBA) program is an international initiative (by BirdLife International), that seeks to identify and conserve all bird species and their habitats. The CNF and Bird Studies Canada are the Canadian partners in the Americas IBA program, which includes the US, Mexico, and 17 countries in Central and South America. Globally, continentally and nationally significant IBAs are being identified using a set of internationally agreed-upon criteria. Canadian Community Conservation Planners have been hired to write conservation plans for high priority IBAs with the involvement of local communities. Sites are currently being selected and PSG members are encouraged to get involved with local stakeholder groups. The IBA Community Action Fund will provide funds (up to $5,000, to be matched 1:1) for high priority actions identified in IBA conservation plans. This summer, funds helped support the Triangle I. Cassin's Auklet telemetry work, with Doug Bertram as principal investigator.

Tony Gaston (CWS) - I continued work with the Laskeek Bay Conservation Society to monitor population parameters for Ancient Murrelets in Laskeek Bay (Reef and East Limestone Is.). Timing of breeding was early and very synchronous in 1999, after the broad spread of laying in 1998. Nearly 40% of nest boxes placed on Reef I. in 1997 were occupied. Among older boxes (from 1986) almost 100% were occupied, including 2 discarded ones that had been thrown on the surface. Monitoring of Glaucous-winged Gull and Black Oystercatcher numbers also continued. In mid-July, I switched to Coats I., where the CWS now has a well-appointed field station. Monitoring and banding of Thick-billed Murres and Glaucous Gulls was carried out. In conjunction with this project, **Linda Wilson** (York Univ., UK) carried out a study to assess the impact of various handling procedures on the murres, and **Uli Steiner** (Univ. of Gottingen, Germany) studied the behaviour of pre-breeding murres, especially factors relating to site selection. **Kerry Woo** (Univ. of Ottawa) continued working on the foraging behavior of murres; the project was assisted by the loan of depth and activity recorders from **Silvano Benvenuti** (Univ. of Pisa, Italy). An overall decrease in Arctic Cod in the diet of murres has been noted since the mid-1980's, with a switch to Capelin. This year the trend intensified, with Sandlance showing as important diet items for the first time. It appears that significant directional changes are taking place in the marine ecosystems of northern Hudson Bay.

Quebec

Gilles Chapdelaine (CWS) – A CWS crew (**Jean-François Rail, Jocelyn Thibeault** and Gilles) completed surveys of the sanctuaries along the North Shore of the Gulf of St. Lawrence (Fog I., Wolf Bay, St. Mary's Is., Gros Mecatina, and Bradore Bay). Main highlights are the increase of Razorbill in all the sanctuaries, especially at St. Mary's where we estimated 7,000 pairs by using island-specific k-ratios technique at the same time as the survey. This represents a doubling of the 3,500 pairs estimated in 1993. The increase in Razorbill was expected because net productivity measurements in the 1990's were very high (67-76%). We estimate that the entire estuary and Gulf of St. Lawrence supports 17-18, 000 pairs; about half of the North American Razorbill breeding population. Common Murres also showed a dramatic increase (again especially at St. Mary's Is.); the overall population is now about 25,000 pairs. In contrast, most of the Atlantic Puffin colonies of the North Shore showed a slight decrease. The North Shore puffin population is estimated at only 20,000 pairs. The same CWS crew studied breeding performance of Gannet at Bonaventure I. (Gaspé Peninsula) (the largest Gannet colony in North America). Eggs were collected for contaminant analyses. In July, we surveyed the 6 North American Gannet colonies: 3 in the Gulf of St. Lawrence and 3 on the eastern Atlantic seaside of Newfoundland. **John Chardine** (CWS) joined the Quebec crew for this survey. John is developing a method using computer image processing, to improve the photo counts of Newfoundland colonies. At the moment, traditional photo counts (Gulf of St. Lawrence colonies) is underway and we anticipate an estimate of more than 36,000 pairs (compared to 32,000 in 1994).

PACIFIC RIM

Summarized by ***Beth Flint***

Bob Day worked with **Brian Cooper** of Alaska Biological Research's (ABR) Oregon office on a radar and visual study of endangered Dark-rumped Petrels and Newell's Shearwaters in the vicinity of a proposed wind-farm on West Maui Mountain, Maui Island, Hawaii. Bob and Brian also worked with **Tom Telfer** of Hawaii Department of Lands and Natural Resources in re-surveying Dark-rumped Petrel and Newell's Shearwater populations on Kauai with ornithological radar. This project resurveyed sites that were sampled in 1993 to compare population trends and suggests that the Newell's Shearwater population is declining rapidly. On the Island of Hawaii the U.S. Coast Guard is consulting with US Fish and Wildlife Service on a planned Differ-

ential GPS antenna that may affect Newell's Shearwaters. **Dave Ainley** has been providing information to the Coast Guard to aid in their quest to solve the problem.

Dave Smith (Hawaii Department of Land and Natural Resources) reports that Oahu District Wildlife is in the middle of its annual October seabird survey, which primarily focuses on Wedge-tailed Shearwater fledglings, but picks up other species still in residence. They will be visiting the offshore islets Popoia, the Mokuluas, Mokuauia, Kauhikaipu, Manana, Moku Manu, Kapapa, Mokolii, and Kaena Point in the next two weeks (They have already done the Mokuluas and Mokuauia). Volunteers are welcome. They did not get out to Kure Atoll this fall as planned, due to funding shortfalls. They hope to start working with the USCG again this year to get out there on a regular basis. They will be doing habitat management work on the offshore islands this winter - controlling vegetation on the Mokuluas and Mokuauia, and rats on Mokuauia and possibly Mokolii Islands.

Beth Flint (US Fish and Wildlife Service) continues to coordinate the seabird monitoring program in the Pacific Remote Islands National Wildlife Refuge Complex. The complex spans 2500 miles from north to south and 22 species of tropical seabirds nest on the ~32 islets and islands managed by the Fish and Wildlife Service. Year-round monitoring of population size, reproductive performance, and breeding chronology was supervised by **Brian Allen** at Tern Island, French Frigate Shoals; **Lindsey Hayes**, **Donna O'Daniel**, and **Nancy Pusey** at Johnston Atoll; and a rotating staff at Laysan Island consisting of **Patty Scifres**, **Christina Sulzman, Alexander Wegmann**, **Brendan Courtot, Bart McDermott**, **Holly Gellerman** and **Chris Eggleston**. At each of these sites many exemplary volunteers, too numerous to list, did much of the actual data collection. **Katie Swift** is working in the Honolulu office to incorporate both the new monitoring data and those collected in previous years into the Pacific Seabird Monitoring Database. **Beth Flint** continued to work with colleagues in USFWS Ecological Services office of the Pacific Islands EcoRegion on Natural Resource Damage Assessment of the effects of the Tesoro SPM Hose Oil Spill and on a variety of issues related to the mortality of all albatrosses in the Hawaii Pelagic Longline Fishery.

Beth Flint is working with **Dave Duffy Katie Swift,** and **Pat Tummons** (Environment Hawaii) to organize the Second International Conference on the Biology and Conservation of Albatrosses and other Petrels to be held 8 – 12 May 2000 in Honolulu.

Dave Anderson and **Patricia Fernandez** tracked Laysan and Black-footed Albatrosses at sea using satellite transmitters for a second season. They tagged birds both at Tern Island French Frigate Shoals and for the first time at Kilauea Point National Wildlife Refuge on Kauai in a project sponsored by the Kilauea Point Natural History Association. Their work has provided important insights into the foraging behavior of the two species. Results of their studies can viewed at their web-site: www.wfu.edu/albatross. This site was visited by school children from all over the nation using a curriculum developed from their project.

Anthony Viggiano (University of Washington) continues with data collection and analysis for his Master's Degree research on the demography, population trends, and breeding frequency of Black-footed Albatrosses at Tern Island, French Frigate Shoals. Anthony, refuge staff, and many volunteers are working on the third year of an ambitious effort to band and read every band of all individual Black-footed Albatrosses, both breeding and non-breeding, that visit Tern Island during the 9 month breeding season.

Don Dearborn (Ohio State University) successfully completed another season of postdoctoral research on the Great Frigatebird population at Tern Island, French Frigate Shoals. With Angela Anders he is investigating sexual selection in these dimorphic birds. Spin-offs of his work include the finding that birds breeding at French Frigate Shoals regularly travel enormous distances and can be found roosting in significant numbers at sites as far away as Wake and Johnston Atolls.

Nancy Hoffman at Midway Atoll National Wildlife Refuge supervised seabird monitoring and island restoration projects there with the help of many dedicated volunteers. Peter Pyle of the Oceanic Society supervised monitoring efforts for some of the species on Sand Island in the Atoll.

Kathy Cousins has been busily working with **John Cooper** (Bird Life International Seabird Conservation Programme) to complete the draft proceedings from the Black-footed Albatross Population Biology Workshop. The workshop was convened at the Western Pacific Regional Fishery Management Council (WPRFMC) 8-12 October 1998 and some of the findings from the workshop were presented at the Pacific Seabird Group's 1999 annual meeting. The draft proceedings entitled, "The Population Biology of the Black-footed Albatross in Relation to Mortality Caused by Longline Fishing" is expected to be completed by mid-November 1999 and ready for distribution shortly thereafter. On 7 December 1998, Ms. Cousins accepted a position as the seabird coordinator for the Pacific Islands Area Office, National Marine Fisheries Service. She has been working cooperatively with WPRFMC staff in the preparation of a framework adjustment to the Hawaii Pelagic Fisheries Management Plan to implement measures to reduce the incidental catch of seabirds in the Hawaii-based longline fishery. The Council is expected to vote on these measures on 20 October 1999. Ms. Cousins is also a member of the inter-agency working group for the development of the National Plan of Action for Seabirds and is actively collaborating with fishery industry representatives to develop "bird-safe" gear.

G. Causey Whittow is collecting data from Laysan Albatross eggs laid on the main Hawaiian Islands. Measurements of egg dimensions are made yearly in order to detect long-term trends. The data will also be compared with published values for eggs laid in the Northwestern Hawaiian Islands. In addition, he is studying the paranatal physiology of the Laysan Albatross, measuring heart rate, respiratory frequency and oxygen consumption during the critical pipping-hatching period.

L. Spear, D. Au, R Pitman and **L Ballance**, funded by NSF, will be analyzing seabird abundance data in conjunction with information on the abundance and occurrence patterns of tuna schools In the Eastern Tropical Pacific (ETP). The data sets span about 10 years, cover most of the ETP and were acquired in the project to assess the abundance of porpoise in the ETP (NMFS).

Mark Rauzon visited Wake Atoll with **William. T. Everett** (Endangered Species Recovery Council) this past March and discovered a Christmas Shearwater, the first one seen here in about 60 years. Their cat control efforts appear to be paying off.

Sandy Bartle (Museum of New Zealand) is completing the analysis of

breeding and population data from his Westland Petrel field study 1970-91. As part of an ongoing collaborative program, **Jean-Claude Stahl** (Museum of New Zealand), **Paul Sagar** and **Niall Broekhuizen** (National Institute of Water and Atmospheric Research, New Zealand) are developing an individually-based model aimed at simulating the impact of the New Zealand Southern Bluefin longline fishery on Southern Buller's Albatross populations.

Hiroyoshi Hiroguchi (University of Tokyo) and technicians have been developing a GPS unit for studying the migration of birds. The sample will come out soon. It weighs about 100 g and the size of the box-type unit is about 60 X40 x 30 mm. The device doesn't carry a data retrieval system, and they must re-capture the birds with the GPS unit some months later (e.g., in the following breeding season). Nine units will be available in the end of upcoming February. He is now looking for good target species He has tracked swans, cranes and storks (e.g., Conservation Biology 10:806-812, 1996; Ecological Research 13:273-282, 1998), but they are difficult to re-capture the same individuals to recover the units. Candidate species will be those which migrate hundreds km or more or make long distance foraging trips, those which weigh more than 3800 g, which means the rate of a GPS unit plus harness to the body weight is less than 3 % of body mass, those which are easy to re-capture the same individuals with the unit later, and those which basic ecological and behavioral information are available. He is looking for collaborators. If interested contact him: Hiroyoshi Higuchi, Laboratory of Wildlife Biology, School of Agriculture and Life Sciences, The University of Tokyo, Yayoi 1-1-1, Bunkyo-ku, Tokyo 113-8657, Phone: +81-(0)3-5841-7541, FAX: +81-(0)3-5841-8192, e-mail: higuchi@uf.a.u-tokyo.ac.jp

Hiroshi Hasegawa (Toho University, Chiba Japan) will leave on 18 November 1999 for his 72nd trip out to Torishima to study the biology and status of the Short-tailed Albatross. He reports that the previous season was very successful with 213 pairs raising 143 chicks to fledging.

David Ainley and company (co-PIS: **N. Nur, L Ballance, C Ribic, P Wilson**) have received a 3-y renewal of an NSF-funded project to investigate metapopulation dynamics within a cluster of 5 seabird (penguin) colonies in the southern Ross Sea. Looking at colonies of different size, the project includes analysis of breeding effort and reproductive success, chick growth, diet, feeding-area overlap, feeding behavior and foraging energetics.

April Hedd - During the past year I finished my Ph.D. in Zoology (Univ. of Tasmania, supervised by **Rosemary Gales** and **Mark Hindell**), and returned to settle in Vancouver. My doctoral research examined the breeding biology and foraging ecology of Shy Albatrosses in Tasmania, against the background of the birds' interactions with longline fisheries. Within the Australian Fishing Zone (AFZ), large numbers of seabirds are killed by Japanese and Australian longline fisheries (for Bluefin Tuna). Shy Albatrosses form a significant component of the seabird bycatch in the AFZ, and an estimated 5,000 individuals (Thalassarche cauta and T. eremita, in unknown proportions) have been incidentally caught in the Japanese portion of this fishery in the past decade. Shy Albatrosses are the most frequently caught seabird species in the Australian domestic longline fishery. T. cauta are endemic to Australia, breeding at 3 colonies off Tasmania (Albatross, Pedra Branca and Mewstone Is.). Adult birds from all 3 populations forage locally during the breeding season, being distributed over the southeast Australian continental shelf within 200-300 km of the colonies. Despite the spatial proximity of the colonies, birds from the 3 sites use mutually exclusive foraging zones during the breeding season. The segregated foraging zones of these populations, coupled with their consistent use of areas between years, likely results in different impacts from fisheries. Whereas the population at Albatross Island remains remote from fleets, birds from Pedra Branca and Mewstone likely suffer substantially, as they overlap with longline fisheries throughout their breeding and non-breeding periods.

NON-PACIFIC UNITED STATES

By *James Lovvorn*

Jeremy Hatch spent time in Western Australia at Murdoch University (thanks to **Ron Wooller**) and studied Roseate Terns on the Houtman Abrolhos and at an inshore colony. The goal of this short study was to look for female-female pairs, which are prevalent in the northwest Atlantic. No evidence for a female-biased sex ratio was found in Western Australia. Comparable studies of Roseate Terns in Massachusetts were published in *Ibis* 141:307-320, and the Australian work has been accepted for publication in *Emu*.

Jeff Spendelow of the USGS Patuxent Wildlife Research Center (PWRC) continues to coordinate a long-term metapopulation study of Roseate Terns that nest along the coasts of Massachusetts, Connecticut, and New York. Productivity has been low since 1996 at Jeff's study site on the Falkner Island Unit of the Stewart B. McKinney National Wildlife Refuge in CT, but productivity at the larger colonies being studied has been good. The breeding population has now recovered from effects of Hurricane Bob in 1991, which apparently caused a doubling of overwinter adult mortality and all but wiped out the 1991 cohort of fledglings from these three states. Breeding populations have reached record highs for the 1990s at Great Gull Island, NY (where **Grace Cormons** and **Helen Hays** study them) and in Buzzards Bay, MA (where **Ian Nisbet** and **Jeremy Hatch** study them). **Jim Zingo** and **Maggie Teets** completed their studies of this species at Falkner Island and received MS degrees in 1998. The First Update to the Roseate Tern Recovery Plan was published by the USFWS in 1998. A paper by Nisbet and Spendelow reviewing the now 12-year cooperative research and monitoring project and its contribution to management and recovery of this endangered breeding population, will appear in the next issue of *Waterbirds*. Graduate students now working on Roseate Terns include Ph.D. candidates **Patty Szczys** and **Jim Zingo**, and MS candidates **Corey Grinnell** and **Beth Wenzel**. **Jim Nichols** and **Jim Hines** (PWRC), and **Jean-Dominique Lebreton** and **Roger Pradel** (from France), have developed mulisite/multistage capture-recapture models that can account for staggered entry into the breeding population to estimate survival, recruitment, natal-site fidelity, and dispersal of birds first banded as chicks. They are testing these models with data from the Roseate Tern Metapopulation Project. A list of Metapopulation Project products can be obtained by e-mailing to Jeff_Spendelow@usgs.gov.

Betty Anne Schreiber has just completed her 17th year of field-work at Johnston Atoll National Wildlife Refuge. Although there was no ENSO this year, she found increased chick mortality in tropicbirds, desertion of nests by Sooty Terns, and fewer than normal nesting

numbers of booby species. These are all responses that occur during ENSO events. She believes the effect this year could be from the La Nina event -- colder than normal water -- which caused some changes in fish distributions or availability for the birds.

Doug Forsell, USFWS, continues studies to identify impacts on marine birds of coastal anchored gillnets in the mid-Atlantic region. Major work this year involved aerial surveys in Delaware Bay and Chesapeake Bay to determine the spatial and temporal distribution of birds and nets. Diving ducks in general are at risk of being caught in Virginia, and scoters in Delaware Bay. An estimated 250,000 Black and Surf Scoters were found in offshore waters of Delaware Bay. Doug is also working to define habitat characteristics of diving ducks with a GIS, including depth, substrate, salinity, and eventually benthos. **Mike Haramis**, **Matt Perry**, and **Janet Keough** at PWRC are starting work on scoters and a few other diving ducks using stable isotopes of nitrogen and carbon, plus satellite radios.

John Takekawa of the USGS San Francisco Bay Estuary Field Station, **Jim Lovvorn** of the University of Wyoming, and **Keith Miles** of the USGS Davis Field Station are studying habitat and contaminant relations of scaup and Canvasbacks in San Francisco Bay. Staff doing the real work includes **Susan Wainwright** and University of Wyoming graduate student **Tory Poulton**. Approaches include radio-telemetry, behavior studies, and sampling of birds and their benthic foods. In a related project, female Canvasbacks were radio-tagged at Ruby Lake, Nevada in an attempt to follow these females throughout winter on San Francisco Bay and back to the breeding grounds. The intent was to determine whether contaminants acquired on wintering areas are still present in birds when they return to breed. Unfortunately, although band returns indicated those Canvasbacks nesting at Ruby Lake winter in San Francisco Bay, very few of the radio-tagged females actually went there. This first attempt to test the significance of winter contaminant exposure to later breeding in waterfowl has since been terminated. However, Wyoming graduate student **Kammie Kruse** continues to study nesting success of Canvasbacks at Ruby Lake relative to weather conditions, based on her current work and existing data extending back to the 1970s.

Jim Lovvorn, **Jackie Grebmeier** (University of Tennessee), and **Lee Cooper** (Oak Ridge National Laboratory) made two oceanographic cruises to the Bering Sea south of St. Lawrence Island to study the wintering habitats of Spectacled Eiders. The first cruise was in March-April on the U.S. Coast Guard icebreaker *Polar Sea*, and the second cruise was in September aboard the NSF ship *Alpha Helix*. Data collected will be part of a long-term analysis of benthic change in this area, including past data collected by Jackie and Lee and by **Boris Sirenko** of the Zoological Institute in St. Petersburg, Russia. As part of this project, University of Wyoming Ph.D. student **Paul Kaseloo** continues research on the costs of thermoregulation and diving in captive ducks.

To provide data for modeling associated with both San Francisco Bay and Spectacled Eider projects, Wyoming M.S. student **Samantha Richman** is investigating digestibilities of different clam species in Lesser Scaup and Common Eiders, and intake rates for different species and densities of clams in a large diving tank containing trays of sediment. Samantha had intended to use White-winged Scoters (WWSC) from Saskatchewan as surrogates for Spectacled Eiders (females of these species are very similar in size). However, almost all nesting areas of WWSC there are no longer occupied as the population in the prairie parklands has crashed in recent years. She will try again next summer for scoter eggs, as well as collecting Common Eider eggs from New Brunswick. Meanwhile, she is continuing work on scaup.

Although a planned meeting on the ecology of nonbreeding diving ducks to be held in British Columbia was cancelled owing to inadequate registration, a meeting of invited scientists was held at the USGS Northern Prairie Wildlife Research Center to discuss the worrisome decline of scaup populations. Scaup (which are not distinguished to species in surveys) have decreased by an average 150,000 birds per year since about 1980. This meeting, organized by **Jane Austin** and **Alan Afton** of USGS, resulted in a summary article to be published in *The Wildlife Society Bulletin*. Of interest is the fact that populations of scaup in the boreal forest are showing the most serious declines, possibly for similar reasons that scoters breeding in the same areas have also decreased. The boreal forest has experienced some of the greatest climatic warming of any region on earth, with parts of the Mackenzie River Valley being 4°C warmer than previously. However, Greater Scaup nesting in Alaskan coastal tundra appear to be doing well, while Black Scoters there appear to have declined dramatically. The new North American Bird Conservation Initiative will include a Seaduck Joint Venture, which hopefully will stimulate more research and conservation efforts for seaducks and related divers.

WASHINGTON AND OREGON

By *Roy Lowe*

Washington

Peter Harrison, **Scott Horton**, and **Elena Kuo** of the Washington State Department of Natural Resources organized and managed the fourth year of inland marbled murrelet surveys on State Forest lands in the northwestern Olympic Peninsula of Washington. This one-time inventory of suitable murrelet habitat is an important part of the overall conservation strategy agreed upon in the WDNR Habitat Conservation Plan. Surveys in 1999 covered 6,208 acres, which comprised 82 sites. Sub-canopy behavior was observed at 20 sites (24%), which were receiving first or second year surveys. This is comparable to findings of 22-33% occupancy in previous years. Since 1996, this project has conducted 3,837 visits to complete 2-year PSG protocol surveys at 523 sites (33,421 ac). Sub-canopy behaviors were observed at 251 (48%) of those sites, which totaled 17,044 acres (51%). All survey work to date has been performed by Resources Northwest Consultants and Hamer Environmental under a series of contracts. At this time, we estimate that there are about 15,000 acres left to survey for this project. We expect to take on a substantial proportion of this in the upcoming field season. Detailed reports from each of the past four years are available by contacting: **Peter Harrison**, DNR - Olympic Region, 411 Tillicum Lane, Forks, WA 98331, (360) 374-6131, peter.harrison@wadnr.gov.

Mary Mahaffy continues monitoring contaminant in Pigeon Guillemot eggs. Pigeon Guillemots are common year-round residents in Washington, nesting along the Strait of Juan de Fuca, Hood Canal, the San Juan Islands, and Puget Sound. Pigeon Guillemots typi-

cally nest in natural cavities in a variety of habitats, including bluffs, rock crevices, driftwood and the undersides of piers and lay one or two eggs each year. In 1994, three addled Pigeon Guillemot eggs were collected from two nests in conduit holes in a pier in Elliott Bay. In 1996 and 1998, a total of seven addled Pigeon Guillemot eggs were collected from wooden nest boxes on Protection Island National Wildlife Refuge (NWR). The nest boxes were originally placed on Protection Island NWR to use as part of the Puget Sound Ambient Monitoring Program. The eggs were analyzed for organochlorine pesticides, total PCBs, arsenic, selenium, and mercury. To compensate for moisture loss in the addled eggs, a correction factor was used when evaluating the contaminant concentrations. All data are presented on a wet weight basis. Total PCBs and p,p'-DDE are the only organochlorines discussed here as concentrations of the other organochlorine pesticides were either not detected or present at very low levels. Total PCBs were low in the addled guillemot eggs from Protection Island with an average of 0.3 ppm and a range of 0.1 - 0.7 ppm. The eggs collected from Elliott Bay had higher levels of total PCBs with an average concentration of 12.1 ppm, with a range of 11.6 - 13.0 ppm. These levels were similar to an egg collected in 1982 near Seattle with PCB concentrations with 11.3 ppm. The concentrations of total PCBs in the eggs collected on Protection Island NWR were below levels known to effect reproduction. The concentrations of total PCBs in the eggs collected from Elliott Bay were above levels known to affect hatchability in eggs of some bird species. The average concentration of p,p'-DDE in the eggs from Protection Island NWR was 0.2 ppm, with a range of 0.04 - 0.20 ppm. Similar results were recorded in the eggs from Elliott Bay with an average concentration of p,p'-DDE of 0.5 ppm and a range of 0.4 - 0.6 ppm. The concentrations of DDE in eggs from both locations were below those known to cause negative impacts to birds. The concentrations of mercury, selenium and arsenic in the guillemot eggs from both locations were below levels known to negatively affect birds. The average concentrations of mercury were 0.9 ppm (range of 0.5 - 1.3 ppm) and 1.1 ppm (range of 0.7 - 1.3 ppm) in the eggs from Protection Island NWR and Elliott Bay, respectively. Selenium concentrations in eggs from both locations ranged from 0.3 - 1.2 ppm. Arsenic concentrations in the guillemot eggs from both locations ranged from not detected to 0.6 ppm.

Mary Carlson reports that the second Rhinoceros Auklet to be hatched in captivity hatched at The Seattle Aquarium, July 11, 1999. The parental care of the chick in the nest chamber was filmed using a noninvasive technique, an infrared sensitive camera. Pictures of the chick just after hatching can be seen on the Aquarium's website. The chick has since fledged and is on exhibit with the rest of the Alcid collection.

Washington Department of Fish and Wildlife biologists are busy with Forest Practices application review to protect Marbled Murrelet habitat on private land. **Lora Leschner** reported that the Department of Fish and Wildlife is finding cases where timber companies are not disclosing that their proposed timber sales are in or adjacent to Marbled Murrelet habitat. Biologists have found Marbled Murrelet habitat logged because no one could check the Forest Practices application for accuracy.

The marine bird component of the Puget Sound Ambient Monitoring Program (PSAMP), a part of Washington Department of Fish and Wildlife (WDFW) conducted both summer (July) and winter (December-February) aerial surveys of marine birds and waterfowl throughout all of the inner marine waters of Washington state this last year. The data are available in ARC GIS format and there are standardized maps for all or portions of these waters upon which users can select species, years or combinations of years, density or point type of data, summer or winter survey window, and other menu driven options for the 1992-99 period. This data can be accessed through the Wildlife Resources Data Section (WRDS) of the Washington Department of Fish and Wildlife in Olympia through **Shelly Snyder** at 360-902-2483. Budget cuts will mean that the summer surveys will not be continued in 2000, but the winter aerial surveys will continue. The winter surveys continue to document the declines in scoters and scaup seen over the last twenty years as well as documenting an even larger decline in numbers of wintering western grebes using the inner marine waters of Washington state. Data for certain sites where good historical data existed suggest that only 10-15 percent of western grebe numbers remain in Washington compared to what was seen twenty years ago. A collaborative effort began May 1999 between WDFW's PSAMP program, USFWS, and volunteer groups that focused on censusing by boat, all Pigeon Guillemot colonies in the inner marine waters of Washington State. This census covered all of the colonies found in the 1989 Washington State seabird colony catalog, but it also included many colonies not included in the 1989 catalog. Unlike the 1989 colony catalog which included much data collected incidentally at varied times, this survey strictly focuses on pigeon guillemot and collects data during the pre-egg laying period following strict protocol of timing and procedure. This survey is intended to continue each May for the next 3-5 years and will offer a much better monitoring tool for a breeding species found throughout all of greater Puget Sound. For further information on this effort, contact either **David Nysewander** (360-902-2693), **Mary Mahaffy** (360-753-7763), or **Joe Evenson** (360-902-2524).

Martin Raphael, Diane Evans, and Randall Wilk of the US Forest Service Pacific Northwest Research Station in Olympia, WA, continued several collaborative studies on Marbled Murrelets in Puget Sound and Hood Canal during 1999. As a follow-up to last year's multi-agency efforts to test several at-sea survey methods, with the ultimate goal being a standardized regional at-sea survey protocol, they continued tests of how the number of observers influences density estimates, observer variability in distance estimation, and the overall accuracy of either radial or perpendicular distance estimates. Direct estimates of perpendicular distances performed better in most of the tests they conducted (8 of 10 comparisons), although the differences were not strong. Direct estimates were somewhat more precise than the radial method, but both estimates were biased. They concluded that either method could be used for surveys using the protocols we employed. However, if observers estimated azimuths, radial estimates would have greater error, and birds were more likely to be missed when the radial method was employed in areas of high murrelet densities. Results for the number of observers were not available at this writing. As part of ongoing Marbled Murrelet research, systematic at-sea surveys were conducted around the San Juan Island archipelago for the fifth consecutive summer to investigate within-season and annual changes in distributions, densities, and productivity indices of mur-

relets. Numbers of Marbled Murrelets were lower in 1999 compared with 1998 (69% of 1999 levels for corresponding time periods and equal effort), although seasonal changes in distribution were consistent. They also continued monthly breeding season surveys along 288 km within and north of Hood Canal. Numbers and distributions appeared similar to 1998. In collaboration with **Brian Cooper** of ABR, Inc, they completed a four-year assessment of radar as a long-term monitoring tool by measuring seasonal and annual variability in inland radar counts on the Olympic Peninsula. They also conducted a second year of radar sampling at large drainages around the Olympic Peninsula to determine if the level of murrelet activity can be correlated with the distribution of potentially suitable nesting habitat defined at a broad scale. Each of 12 drainages was sampled for three consecutive mornings, compared with 9 drainages in 1998. Preliminary results show a strong correlation with the amount of habitat. Indices for habitat configuration also will be examined. The third component of this study will examine the correlation of adjacent at-sea densities with radar counts and habitat. **Chris Thompson** of the Washington Department of Fish and Wildlife is collaborating by contributing boat survey data. With **John Marzluff** of the University of Washington, they completed the fifth and final year of an assessment of the effects of landscape and stand features on the predation risk of artificial murrelet nests on the western Olympic Peninsula. Washington Department of Natural Resources (WDNR), Rayonier Timber Co., USFWS, and NCASI also funded this study. They have begun development of a map of potential murrelet nesting habitat for Western Washington Cascades and the Olympic Peninsula. This habitat map will be derived from a region-wide vegetation map being developed by the Forest Service and Bureau of Land Management in support of monitoring efforts throughout the Pacific Northwest. As an initial step, we are working with Washington Department of Fish and Wildlife to update and refine their murrelet observation database to more precisely define occupied and unoccupied murrelet survey sites. Once this step is completed, and once the base vegetation layer is delivered, we will superimpose the two data sources to analyze which attributes of the vegetation map are the best predictors of murrelet occupancy. Results of this analysis, along with other field data, will be used to develop a baseline murrelet habitat map. The ultimate aim of this project is to update the map at 10-year intervals to describe the trend in murrelet habitat.

Brian Cooper worked with **Richard Blaha** of ABR on a study for the Olympic Natural Resources Center to develop radar as a tool to increase the accuracy and efficiency of inland surveys for Marbled Murrelets.

Joe Galusha and **Mitch Northam** (Walla Walla College) conducted a study of the behavioral responses of Glaucous-winged Gulls to Bald Eagle flights over Violet Point, Protection Island, Jefferson County, WA. Preliminary analysis shows that the rate of preening by gulls is greater after landings following disturbances than the rate following return from feeding. The function of preening as a "cooling down" behavior in this context is being considered. **Joe Galusha** also studied the movements of double-crested cormorants into and out of a breeding colony on Protection Island. The net movements of cormorants changed from outgoing to incoming with progression of the daylight hours. Chaos theory will be applied to these data in the near future to determine if they are occurring irregularly.

James Hayward (Andrews University) and **Joe Galusha** continued a survey of the presence on and use of Violet Point by various seabird species and Harbor Seals. Later analysis of this data will show variations of use with time of day, tide, and correlation between the different species. Jim also conducted a thorough botanical survey of a major portion of Protection Island. These results will form the basis of an ecosystem model for this island and wildlife refuge.

Jan White is conducting research involving oiled seabirds. She is working on a blood test that she hopes will verify that previously oiled birds do not suffer long-term physiological impacts.

Nanette Seto and **Alan Clark** of the USFWS conducted an aerial survey of Brown Pelicans from Point Grenville, south to and including the Columbia River. The number of pelicans present at the time of the survey was lower than normal. This survey was coordinated with the Oregon survey of Brown Pelicans.

Deborah Jaques monitored Brown Pelican roost habitat use in southern Washington for a second year, as part of a project to monitor potential impacts of a highway erosion control project at Willapa Bay, under contract with the USFWS Willapa NWR. The traditional primary night roost at Willapa Bay, a large sandbar at the mouth of the bay, eroded during the winter. Deborah is studying pelican response to loss of this key roost site and it's affect on pelican distribution in southern Washington.

During the second year of a study to compare Marbled Murrelet use in developed areas of Olympic National Park with use of wilderness areas in the park, **Shelley Hall** and others conducted inland surveys at four developed sites and nine wilderness sites during 1999. As in previous years, they documented presence at all sites, with occupied detections at approximately 80% of sites. They also collected habitat data at 11 developed sites and 18 wilderness sites this year.

In summer 1999 **Chris Thompson** and other WDFW staff concentrated on three general tasks: (1) documentation of the post-breeding immigration of Common Murres from Oregon northward along the outer coast of Washington, west coast of Vancouver Island, and eastward along the Strait of Juan de Fuca, (2) weekly surveys of outer coasts beaches for dead birds, and (3) as in previous years and seasons, conducting additional sets of replicates of at sea transects for Marbled Murrelets at different distances parallel to shore and in zig-zag (sawtooth) orientation from shore to determine the optimal placement, orientation, number, and length of transects to conduct in Washington to monitor population trends of murrelets most efficiently (i.e. with maximal statistical power per unit effort [cost]). This is at least the third year for all of these studies. The murre immigration study documented that (1) reproductive success of murres in Oregon (indicated by dad-chick pairs) was about an order of magnitude higher in 1999 than in either 1997 or 1998, (2) a large percentage of "Oregon" murres continue to migrate north of Washington into Canada along the west coast of Vancouver Island, and (3) at least two thousand murre chicks died and washed up on beaches in Washington. In contrast to previous years in which adult murres predominated, weekly surveys of beaches for dead birds were predominated by Larus gulls, Northern Fulmars, and Sooty Shearwaters (and murre chicks in mid- to late August). Unusual species included 3 Mottled Petrels, at least three Marbled Murrelets, 1 Bald Eagle, many Buller's and Short-tailed Shearwaters, and 1 Sabine's Gull.

Analyses of 1999 at-sea transect data are not complete, but preliminary analyses suggest that, for Washington, monitoring for Marbled Murrelet population trends should be done by conducting replicate sets of transects (5-10 each summer [optimally in June]) in which each set consists of at least one transect parallel to shore at a close distance (e.g. 500 m) and another zig-zag (sawtooth) transect covering further distances from shore out to about 3000 m.

Oregon

Craig Strong and **Deborah Jaques** of Crescent Coastal Research completed the eighth year of Marbled Murrelet and seabird surveys along sections of the Oregon coast, assisted by **Terry Carten**, **Don Williamson**, **Darrel Warnock**, and **David Fix**. Cool water and high primary productivity prevailed throughout Oregon in this La Nina year, with relatively high productivity indices for all alcid species, with the possible exception of the Marbled Murrelet. Murrelets showed a surge of fledglings at sea in late-July, but then the proportion of young dropped to less than 4% of the at-sea population in August, similar to many other years. Marbled Murrelets were scattered broadly within 2 km of shore early in the season, but moved closer to shore in August. We are continuing to explore the relationship between ocean productivity and murrelet distribution and production of young. Quantified results will be available from Crescent Coastal Research later in the fall.

Kim Nelson (Oregon Cooperative Fish and Wildlife Research Unit - Oregon State University) completed data collection for her five-year research project on state lands in western Oregon. The focus of the research was on characterizing Marbled Murrelet nesting habitat and determining the conditions that provide for successful nesting. A total of 37 nests were found in 13 forest stands between 1995 and 1999. Seventy-three percent of the nests (27old) were found by climbing 1,781 trees in random or cluster plots, while 10 active nests were located during dawn surveys or climbing trees in areas of high activity. Detections of murrelets were low throughout our study area in May and June, but increased in July to what appeared to be a ?normal? level. Activity in July varied among sites, however; sites with generally low sub-canopy behaviors in past years seemed to explode with activity, while those with many of these behaviors in past years were relatively quiet. Analyses developing predictive models of murrelet nesting habitat, and comparing nest to non-nest plots and successful to unsuccessful nests, are ongoing. The Oregon Department of Forestry (ODF), Oregon Department of Fish and Wildlife, and U.S. Fish and Wildlife Service funded this project. In 1999, field assistance was provided by **Dave Buchholz** (ODF), **Karen Cradler**, **Bob Fields** (ODF), **John Hinkle**, **Jeremiah Howe**, **Ross Hubbard**, **Scott Hyde**, **Chris Knauf**, **Dave McCarthy**, **Ray Rainbolt**, and **Mike Wilson** (ODF). Throughout the project, **Mandy Wilson** was responsible for data entry and supervision of the field crew.

Kim Nelson (Oregon Cooperative Fish and Wildlife Research Unit - Oregon State University) is also continuing her research developing models of Marbled Murrelet habitat use in western Oregon using ground data from nests and random sites, landscape data from LANDSAT images, and murrelet at-sea locations from offshore surveys by **Craig Strong** (Crescent Coastal Research). This project is being funded by the U.S. Forest Service PNW Research Station in Corvallis (in cooperation with **Tom Spies**) and the U.S. Fish and Wildlife Service. An aerial photo interpretation project of murrelet nests sites in Oregon is also underway with **Bill Ripple** and the ERSAL lab at Oregon State University. Funding for this project is being provided by the U.S. Fish and Wildlife Service.

Students in the marine birds and mammal class at the Oregon Institute of Marine biology monitored the OIMB Pelagic Cormorant colony for the 27th consecutive year under the guidance of **Doug Warrick** and **Wendy Williams**.

Wayne Logan of the Bureau of Land Management and others conducted Marbled Murrelet protocol surveys for upcoming timber sales with negative results. In the Tillamook Resource Area no murrelet detections were made at 2 timber sale sites and none were made at 4 timber sale sites in the Mary's Peak Resource Area. The Valley of the Giants was surveyed several times and produced the lowest detections on record and in general there surveying indicated that 1999 was one of the poorest years on record. In most years 30 - 40 detections could be made in the meadow at the Valley of the Giants in a morning, but this year **Wayne Logan** only recorded 15 detections (same two birds flying up and down the creek) in the middle of July, **Scott Hopkins** recorded only 5 detections on a different day and on still another day **Gary Licata** had a mere 2 detections. No new nest trees were even suspected this year.

The Oregon State University/Columbia River Inter-Tribal Fish Commission research team continued research on predation by Caspian Terns, Double-crested Cormorants, and Western/Glaucous-winged Gulls on listed salmonids in the Columbia River estuary. This year's research team included **Dan Roby**, **Ken Collis**, **David Craig**, **Stephanie Adamany**, **Don Lyons**, **Jessica Adkins**, and a number of seasonal techs and volunteers. One of the research objectives was to attempt to move part of the large Caspian Tern colony on Rice Island to East Sand Island (13 miles closer to the ocean), where it was hoped they would consume fewer salmonids. After earth moving equipment created about 8 acres of bare-sand nesting habitat on East Sand Island, tern decoys, audio playback systems, and selective gull removal were used to encourage terns to nest on the new site. At the same time, silt fencing was erected on part of the colony site on Rice Island to further encourage terns to shift from Rice Island to East Sand Island. Despite greatly reduced colony area, close to the same number of terns nested on Rice Island in 1999 as in 1998 (about 8,000 pairs), and their nesting success was similar in the two years (about 0.5 young fledged per nesting attempt). The Rice Island terns continued to rely mostly on juvenile salmonids as a food supply (75% of prey items). About 1,400 pairs of Caspian terns nested at the new colony site on East Sand Island, where approximately 1,600-1,700 chicks were raised (ca. 1.2 young fledged per nesting attempt). The terns nesting on East Sand Island foraged more in marine and brackish water habitats than did the terns nesting on Rice Island, and the diet of East Sand Island terns was 44% salmonids, or 42% fewer salmonids than were consumed by terns nesting on Rice Island. The National Marine Fisheries Service and the U.S. Army Corps of Engineers have stated their intention to allow no nesting by Caspian Terns on Rice Island in the year 2000. There is also strong pressure from some fish managers and advocacy groups to strictly limit or eliminate the newly restored East Sand Island tern colony. The only other known Caspian Tern colony along the coast of Oregon and Washington is about 500 pairs nesting at a superfund site near Tacoma, WA that is slated

for removal this winter. Thus the future of this species in the Pacific Northwest appears uncertain. The Double-crested Cormorant population in the Columbia River estuary remained approximately stable this year, despite the complete failure of cormorants to nest on Rice Island, where about 800 pairs nested in 1998. The estimated size of the Double-crested Cormorant colony on East Sand Island, the largest of its kind on the Pacific coast of North America, increased by about 15% to 7,200 breeding pairs, suggesting that the cormorants that nested on Rice Island in 1998 shifted to East Sand Island this year. Estimated productivity of Double-crested Cormorants nesting on East Sand Island was 1.3 fledglings/nesting attempt. Because this population has consumed millions of juvenile salmonids in each of the last two years, pressure is building from fish managers to greatly reduce or eliminate this major seabird colony as well.

Brian Cooper worked with **Nancy Lee** and **Naomi Bentivoglio** of the USFWS on the third year of a study using radar to collect information for long-term population monitoring of Marbled Murrelets along the Oregon coast. They also plan to pool their data with **Craig Strong's** (Crescent Coastal Research) at-sea data to examine the relationship between inland abundance and at-sea distribution.

Roy Lowe and **David Pitkin** (USFWS, Oregon Coastal Refuges Office) continued seabird monitoring projects during the summer of 1999. Aerial photographic surveys were conducted of all Common Murre and Brandt's Cormorant colonies and most Double-crested Cormorant colonies along the Oregon coast. The number of murres present at most colonies appeared to be higher than the last few years although intense colony disturbance by Bald Eagles led to complete abandonment at some sites. Productivity at murre colonies with little disturbance appeared to be high. Two new estuarine Double-crested Cormorant colonies were discovered this year during surveys as well as one new Bald Eagle nest. Murre and cormorant colony counting from slides will be conducted later this winter. Other field -work included monitoring Pelagic Cormorant nesting attempts at 17 colonies near Newport. Pelagic Cormorants at these colony sites rebounded from last years all time low of 121 nest to 633 nests this year which is 89% of the 12-year mean.. For the 13th consecutive year a beached bird mortality study was conducted on 7.1 km of beach located between Seal Rock and Alsea Bay in Lincoln County, Oregon. This study is conducted from June through September. Mortality this year was low until mid-August when there was a substantial die-off of hatching-year common murres. During August alone 382 HY murres and 11 adults murres were recovered. This level of mortality is about average during years of good production at colonies. In September, **David Pitkin** and **Eric Nelson**, (USFWS) conducted an aerial survey of Brown Pelicans along the Oregon coast in coordination with a similar survey in Washington. Aleutian Canada Goose use of Oregon coastal rocks and islands also continued again this year.

Bob and **Shirley Loeffel** and **Don** and **Sara Brown** and **Liamon Osis** continued to conduct their long term beached bird mortality transects near Newport, Oregon. Their study is conducted on 7.4 km of beach just south of Newport, Lincoln County, Oregon. This is the 22nd consecutive year of this study.

NORTHERN CALIFORNIA

By *Craig Strong*

Sarah Allen reports Point Reyes National Seashore continues to support long-term monitoring of Western Snowy Plovers with PRBO and seabirds at Point Reyes Headland with funds from the Apex Houston with **Mike Parker** of the US Fish and Wildlife Service (FWS). Additionally, she conducted an inventory of shorebirds and waterbirds at Point Reyes National Seashore and Golden Gate National Recreation Area (NRA) during the winter of 1998-99. PRBO, Marin Audubon and the National Park Service (NPS) cooperated in this survey work. A final report is due by the ed of the year. They will develop monitoring protocols based on the results of this inventory for long- term monitoring of this key component of the marine and estuarine ecosystems of Point Reyes.

Carol Keiper and **Hannah Nevins** conducted a survey of seabirds on the David Starr Jordan as part of the long-term survey of seabirds in the Gulf of the Farallones initiated in 1985 with **D.G. Ainley** and **S.G. Allen**. They surveyed in May and June; the weather was very windy and consequently the number of survey days was reduced and the number of seabirds observed was low. On the second leg, Hannah Nevins saw lots of feeding flocks and lots of birds (primarily Sooty Shearwaters and Common Murres).

Tim Ash (California Department of Transportation), **Bill Stevens** (Mendocino Redwood Company), **Tom Hamer, John Hunter**, and **Esther Burkett** (California Department of Fish and Game) completed 20 ornithological radar surveys for Marbled Murrelets in coastal Mendocino and Sonoma counties in northwestern California. Murrelets were detected on some surveys, which were intended to provide additional distribution information for this problematic area.

David Ainley and **C. Tynan** of H.T. Harvey & Associates have received funding from the NSF/NOAA GLOBEC project to investigate occurrence patterns of planktivorous predators with respect to availability of prey (euphausiids) in the Eastern North Pacific. In turn, they will quantify school structure of euphausiids as affected by predator density. The study is part of a multi-investigator effort off southern Oregon and northern California beginning in spring 2000.

Thanks to a grant from the Oil Spill Response Institute, NOAA, they have finished compiling software that will allow more sophisticated estimation of population size and variance from seabird data collected at sea using strip transects. The work has been in collaboration scientists and statisticians from the University of St. Andrews, Scotland (**L Clark, S. Buckland**). Results, using general additive modeling, should be on par with those attained from line transects.

David Ainley and **Larry Spear** continue to monitor occurrence patterns and abundance of marine birds and mammals in the vicinity of the San Francisco-Deep Ocean Disposal Site, about 50 km west of the Farallon Islands. The work involves regular trips aboard tug boats pulling mud scows (mud dredged by SF Bay), and three 5-d cruises per year in a ulti-investigator effort to assess food we dynamics in the vicinity of the mud disposal site.

Ben Becker and **Steve Beissinger** continued monitoring the Central California Marbled Murrelet population which is still showing very low Hatch Year to After Hatch Year (HY/AHY) ratios. They are also investigating at-sea habitat selection in relation to oceanographic and prey variability, as well as performing diet studies using stable isotopes.

Mchelle Hester, Grant Ballard, Diana Humple, Mike Lynes, Julie Thayer, Jerry Nusbaum and **Bill Sydeman** (Point Reyes Bird Observatory) continue to aid the California Department of Fish and Game - Office of Oil Spill Prevention and Response in responding to and documenting the effects of major oiling events in California.

Deborah Jaques and **Craig Strong** completed the third year of seabird population and productivity monitoring at Castle Rock National Wildlife Refuge (NWR), overseen by Humboldt Bay NWR manager **Kim Forrest**. Common Murre productivity was excellent, in dramatic contrast to the reproductive failure observed during ENSO conditions in 1998. Pigeon Guillemot numbers were higher than during 1998, but down from 1997, possibly indicating adult mortality. Tufted Puffin activity was markedly increased over 1997-1998. More information on the 1999 breeding season for diurnal seabirds at Castle Rock will be available when the report to the USFWS is completed at the end of the year (available through Humboldt Bay National Wildlife Refuge.)

Mike Parker (USFWS/Humboldt State Univ.) reports that the Common Murre Restoration Project experienced another successful field season during 1999. **Mike Parker, Jennifer Boyce, Richard Young, Holly Gellerman, Nora Rojek, Christine Hamilton,** and **Victoria Slowik** all worked on monitoring Common Murre and other seabird colonies between Point Reyes and Point Sur. This year murres and other seabirds had a very successful season. Specifically, the social attraction work at Devil's Slide Rock had another extremely successful year. The number of nesting pairs of murres on Devil's Slide Rock increased from 14 (in 1998) to 70 (in 1999) with 56 chicks fledging. In addition, it was a very favorable season for Common Murres, Brandt's Cormorants, and Pelagic Cormorants at colonies monitored along the nearshore coast (i.e., Point Reyes, Devil's Slide Rock, Castle Rock, and Hurricane Point Rock). Social attraction and monitoring efforts will be continued during the year 2000.

Mark Rauzon (Marine Endeavors) subcontracted under Point Reyes Bird Observatory (PRBO) with **Meredith Elliot** and **Bill Sydeman** of PRBO to help CalTrans resolve cormorant conflicts in relation to ongoing maintenance and bridge earthquake retrofitting on the San Francisco-Oakland Bay Bridge. They assessed the population size and provided guidelines to bridge engineers about the timing, type of work and distances contract workers can operate in the cormorant colony without harming the birds. On June 18, 1999, there were at least 794 nests on the SFOBB, a 59% increase in a 10 year period from 465 nests counted in 1990. We hope to relocate this colony to a new bridge when it is erected in the early 2000s.

Jan Roletto, Joe Mortenson, and **Leslie Grella** of the Gulf of the Farallones National Marine Sanctuary, (Fort Mason, Building 201, San Francisco, CA 94123) continue their work on Beach Watch. In 1993, the Gulf of the Farallones National Marine Sanctuary began Beach Watch, a long-term shoreline monitoring program. The objectives of the program are to: 1) provide a baseline of information on the average presence of live and beach-cast marine organisms; 2) assist Sanctuary management in the early detection of natural and human-caused environmental perturbations such as initial phases of an epizootic, El Niño-Southern Oscillation events and oil spills; 3) develop a network of expert shoreline surveyors who can respond during an oil spill; 4) educate the public about the coastal environment; 5) encourage the public to help protect their beaches. During 1998, of the 86 beach segments (total of 241 km) between Bodega Head and southern San Mateo County 25 beach segments (total of 48.7 km) were monitored every four weeks and 30 beach segments (70.8 km) were monitored every two weeks. During 1998 a total of 74 species and 3,066 beached birds were found (1.411/km). Common Murres were most frequently reported (n= 1,034 murres, 0.476/km). Alcids in general were the most commonly encountered beached birds at a rate of 0.573 birds per km surveyed. Murres and otariids greatly increased above the rate previously document for this region, during the months of May and June. The encounter rate for dead Common Murres during May and June 1994-1997 was 0.001 birds per km surveyed. During 1998 this rate increased dramatically to 1.928/km. From October 1993 to September 1998 a total of 178 live avian species were noted within the survey area. Live animal counts are useful to resource managers to determine resources at risk during coastal oil spills. Volunteers who regularly conduct baseline surveys are able to efficiently respond during an oil spill and collect data to aid in response efforts and damage assessment. For a complete copy of the Beach Watch Annual Report: 1998, write to Jan Roletto, Farallones Marine Sanctuary Association The Presidio, P.O. Box 29386 San Francisco, CA 94129. <jan.roletto@noaa.gov> Include your mailing address.

Kristin Schmidt and **Jeff Mattison** (Six Rivers National Forest), **Howard Stauffer** (Humboldt State University), **C.J. Ralph** and **Sherri Miller** (Redwood Sciences Lab), **John Hunter** and **Lynn Roberts** (USFWS Arcata Office), **Rob Hewitt** (LBJ Enterprises), **Tom Hamer** (Hamer Environmental), and **Ron LeValley** (Mad River Biologists) completed the second year of a two-year survey project intended to determine the status of Marbled Murrelets in northern FEMAT Zone 2 in California. No murrelets were detected during 1408 surveys.

Scott A. Shaffer, University of California Santa Cruz, is currently collaborating on a project with **Dr. Henri Weimerskirch** of CEBC-CNRS, France studying the foraging energetics and ecology of albatrosses in the French sub-Antarctic Islands of southwestern Indian Ocean. To date, they have completed two field seasons ('98 and '99) measuring foraging costs with doubly labeled water and foraging behavior with satellite transmitters on male and female wandering albatrosses during the incubation and chick brooding periods. In November 1999, he will embark on a third field effort to Kerguelen Island, to conduct similar measurements on Black-browed albatrosses. This will complete his doctoral research, which he plans to finish in June 2000. He will be able to attend the Feb. 2000 meeting in Napa with the intention of presenting some of his work. Support for this project has come from two grants from the National Science Foundation and one grant from the National Geographic Society.

Craig Strong (Crescent Coastal Research) **Esther Burkett** (CDFG) and **Amedee Brickey** (USFWS Arcata Field Office) have coordinated the initiation of at-sea surveys in Marbled Murrelet conservation Zone 5 (Mendocino and Sonoma Counties) to gain new information on distribution and abundance of murrelets in this area. Results from the first two surveys showed fairly good agreement with surveys completed in 1994-95 indicating that small, localized subpopulations do exist in both counties.

Follow-up inland surveys by **E. Burkett** and crew adjacent to at-sea detections produced occupied behaviors of murrelets up the Gualala River. The project will be completed in 2000.

Bill Sydeman, Michelle Hester, Kyra Mills, Nadav Nur, Kelly Hastings and **Peter Pyle** and **Jerry Nusbaum** (Point Reyes Bird Observatory) continue to study the effects of climate variability and change on the population dynamics, demography and feeding ecology of 12 species of seabirds and 5 species of pinnipeds on the Farallon Islands. In cooperation with **Joelle Buffa** of the U.S. Fish and Wildlife Service, Y2K will represent the 30th year of data collection on this project. Thanks to USFWS, the Farallon research facility is receiving a major facelift during the fall of 1999, with plans for new flooring, roofing and siding on both residences.

Bill Sydeman, Michelle Hester, and **Julie Thayer** continue to study and manage the recovering population of Rhinoceros Auklets on Ano Nuevo Island. Initiated in 1993, population growth has been facilitated by reducing human disturbance and by augmenting habitat via the installation of nest boxes.

Bill Sydeman, Julie Thayer, and **Ingrid Harrold,** in cooperation with **Daphne Hatch** of the Golden Gate National Recreation Area, are monitoring seabirds on Alcatraz Island, with a focus on Brandt's Cormorants and effects of human disturbance on this species.

Bill Sydeman, Jen Roth, Gary Page, Sarah Allen (Point Reyes National Seashore), **John Marzluff** (University of Washington), **John Kelly** (Audubon Canyon Ranch) and **Mike Parker** (USFWS) initiated a 3 year study in 1999 to investigate and minimize effects Common raven predation on Snowy Plovers and Common Murres on the Point Reyes Peninsula. Ravens are the primary predator on Western Snowy Plovers and also prey heavily on Common Murre eggs and chicks. Currently, 12 Ravens have been radio-tagged at Point Reyes. Preliminary data indicate that the birds have very tight home ranges and forage on a very diverse diet. They gather to forage at cattle feeding stations in large flocks and one roost site at Point Reyes had over 200 birds.

Bill Sydeman, Nadav Nur (PRBO), **Julia Parrish** (University of Washington), **Doug Bertram** (Simon Fraser University), **Scott Hatch** (USGS-BRD), **Vern Byrd** (USFWS), and **Ed Murphy** (University of Alaska) are completing analyses on their broad-scale study of the effects of the 1997-98 El Nino on marine birds and coastal ecosystems from southern California to the Bering Sea.

Nadav Nur, B. Sydeman (PRBO), **Derek Girman** (Sonoma State University), **Tom Smith** (San Francisco State University), **Dave Gilmer** and **Harry Carter** (USGS-BRD) recently completed an analysis on metapopulation structure (using genetic markers) and population viability of Ashy Storm-Petrels and Xantus' Murrelets.

Laird Henkel has continued collecting data for his thesis on the distribution of nearshore birds in Monterey Bay. Other Moss Landing Marine Laboratory bird studies are being done by **Josh Adams,** who is working with **Harry Carter** and **John Takekawa** on the Prince Island Cassin's Auklet radio-telemetry project, **Scott Benson** who is still researching seabirds and krill in Monterey Bay, and **Sarah Connors** who is studying shorebird distribution in Elkhorn Slough.

Harry Carter, Gerry McChesney, Bill McIver, Darrell Whitworth, Phil Capitolo, John Takekawa, and **Rick Golightly** of USGS and HSU also continue to complete past California seabird projects and continue to collaborate on several other on-going seabird studies, including: California Seabird Colony Catalog; Common Murre Restoration Project; Population Trends of Common Murres in California, Oregon, Washington, and British Columbia; Xantus' Murrelet, Ashy Storm-petrel, and Brandt's Cormorant studies in the Channel Islands; various seabird telemetry studies; seabird mortality from the 1997-1998 Point Reyes Tarball Events; and PSG Seabird Database.

SOUTHERN CALIFORNIA

By *Pat Mock*

Charlie Collins continues his long-term studies of the Tern/Black Skimmer colony at Bolsa Chica., including field growth studies of Elegant Terns and survival studies of the Skimmers and starting to look at colony fidelity.

Judith Latta Hand still out of biology for the most part, although she did review a paper about Yellow-footed Gulls. Judith is still writing fiction, and looking for a publisher.

Cheryl Baduini writing up the results of her doctoral dissertation research on anomalous weather patterns and their influence on the nutritional condition of shearwaters. She participated in a research trip to the Bering Sea on the R/V Alpha Helix with **George L. Hunt**, last Spring to study the trophic transfer of production at the inner front to short-tailed shearwaters.

K David Hyrenbach continued surveying seabird abundance off southern California during the El Nino and La Nina events, and collaborating with **Dick Veit's** long-term CalCOFI seabird program. David has also been involved in the IN-FRONT study of short-tailed shearwaters in the Bering Sea with **George Hunt** and **Cheryl Baduini**, and he is collaborating with **David Anderson** from Wake Forest University in the analysis of Black-footed and Laysan albatross movements in relationship to oceanographic habitats in the North Pacific.

Lisa T. Ballance and **Robert L. Pitman** are into the second year of a three-year research program designed to assess the status of dolphin populations in the eastern tropical Pacific so that policy decisions regarding the tuna purse seine fishery can be made. Lisa and Bob are also involved with David Ainley in research on Adelie Penguins on Ross Island baleen whales in Antarctic waters and right whales in the Bering Sea.

Pat Herron Baird after an interesting trip to Europe that included the viewing of a total solar eclipse in Romania, is busy writing up her tern research from recent field seasons. **Lisa Snyder** is studying saltmarsh biodiversity from Ventura to Orange counties. **Dan Robinette** is investigating tern food webs at colonies from Ventura to Orange counties.

Pat Mock is conducting biological studies and impact assessments for projects throughout California and Nevada and is involved in several regional conservation planning programs, including a Habitat Conservation Plan (HCP) in the Florida Keys (he's going to Disney World!).

Paige Martin reports from Channel Islands National Park that she and the staff continued monitoring of pelicans, cormorants, gulls, murrelets, and guillemots at Santa Barbara island, gulls at East Anacapa Island, and auklets and cormorants at San Miguel Island. Outside researchers conducted monitoring of Pelecaniforms at Anacapa Island (**Frank Gress**) and aerial surveys of cormorants Park-wide (United States Geological Sur-

vey – Biological Resources Division [USGS-BRD], Dixon Field station). National Park Service (NPS) and USGS-BRD personnel continued monitoring of Ashy Storm-Petrels at select sites at Santa Cruz Island. Except as otherwise noted, data were collected jointly by NPS personnel, Point Reyes Bird Observatory (PRBO) personnel, and Student Conservation Association (SCA) interns. PRBO personnel maintained a presence at San Miguel for the second year in a row making it possible to monitor Cassin's Auklets on a regular schedule. Some of our "ad hoc staff" attended a training session hosted by the Oiled Wildlife Care Network. We have also been working on our internal database. We have been converting older files to Access and creating queries in Access to analyze data and automate reports. Large numbers of squid/light boats were working in the Santa Barbara Channel this year. Their proximity to islands has created concerns about disturbance to seabirds. The potential seabird problem stems from the use of high wattage lights to attract the squid. The lights coming from such a fleet has been described as "like that from a rising full moon". Observers state that in the lights of the squid boats, large type print can be read on the island on an otherwise dark night. CINMS, PRBO, NPS, and California Fish and Game (CFG) held meetings addressing the light boat issue. No decisions have been made regarding management of the fishery or use of lights near colonies.

Shaye Wolf, Aaron Hebshi, Roth, Paige Martin (Channel Island National Park) and **Bill Sydeman** (PRBO) continue to collaborate to study populations of seabirds in CINP, with emphasis on the reproductive dynamics of Xantus' Murrelets on Santa Barbara Island, and Cassin's Auklets on Prince Islet (off San Miguel).

Harry Carter and **Gerry McChesney** report that in 1999, the U.S. Geological Survey (Biological Resources Division, Dixon and Vallejo Field Stations) and Humboldt State University (HSU) began a three-year study (1999-2001) of the at-sea distribution of seabirds and marine mammals in the Southern California Bight, with major funding from the U.S. Geological Survey (Principal Investigators: **Dennis Orthmeyer, John Takekawa, Harry Carter, Rick Golightly**). At-sea transects for all species and colony/roost surveys for cormorants and other species are being conducted in spring-summer, fall, and winter by **Gerry McChesney** (Project Leader), **Bill McIver, John Mason, Mark Pierson** (Minerals Management Service [MMS]), and **Mike McCrary** MMS) from fixed-wing aircraft. Foraging patterns of radio-marked Cassin's Auklets at Prince Island are being studied during the breeding season by **Josh Adams** (Project Leader; USGS/Moss Landing Marine Lab,[MLML]), **John Takekawa, Darrell Whitworth, Harry Carter**, and **Scott Newman** (HSU/University of California, Davis[UCD]). Scott Newman and Christine James (HSU/UCD) are conducting auklet blood studies. Major cooperators include: Minerals Management Service, U.S. Navy (**Steve Swartz/Tom Keeney**), California Department of Fish and Game (**Paul Kelly/Esther Burkett**), and University of California Davis (Wildlife Health Center) & Oiled Wildlife Care Network (**Jonna Mazet**). Computer support has been provided by Ford Consulting (**Glenn Ford**). Pelican studies are being coordinated with University of California Davis (Department of Wildlife, Fisheries, & Conservation Biology) and California Institute of Environmental Studies (**Frank Gress**). Auklet studies are being coordinated with Moss Landing Marine Laboratories (**Jim Harvey**), Channel Islands National Park (**Paige Martin**), Point Reyes Bird Observatory (**Aaron Hebshi/Bill Sydeman**), and Channel Islands National Marine Sanctuary (**Sarah Fangman/Ed Cassano**).

Frank Gress (UC Davis; Calif. Inst. of Environmental Studies) is continuing long-term studies (25+ years) on the reproductive success of Brown Pelicans and 3 cormorant species on Anacapa Island, CA. He is examining the effects of recent El Nino conditions on the breeding success of these species, with comparisons to breeding data from the 1991-1992 ENSO. He has been experimenting with large format high-resolution photography as a means of monitoring both Brown Pelican and Double-crested Cormorant breeding populations on Anacapa and Santa Barbara Islands and is currently analyzing the data and comparing two different methods. Frank is also collaborating with **Gerry McChesney** and **Harry Carter** (USGS-BRD) on two projects: 1) the status of Xantus Murrelets breeding on Anacapa Island, and 2) total Brown Pelican population numbers (mainland, island, and at-sea numbers) in the Southern California Bight throughout the year. **Deborah Jaques** (Crescent Coastal Research) and the CFG (**Paul Kelly**) conducted a fall statewide aerial survey of Brown Pelicans at California coastal roosts to evaluate non-breeding distribution, abundance and habitat use. A statewide survey was also conducted in 1998, which will enable comparison of ENSO and La Nina conditions on broad-scale pelican distribution. Deborah is also involved in ground-based assessment of pelican roosts in southern California, in conjunction with a larger U.C. Davis project coordinated by **Dan Anderson.**

Gerry McChesney, John Mason, Bill McIver, and **Harry Carter** (USGS-BRD Dixon Field Station and Humboldt State University), in cooperation with **Mike McCrary and Mark Pierson** (Minerals Management Service), began a 3 year study of the at-sea distribution of seabirds and marine mammals in the Southern California Bight and adjacent waters, using fixed-wing aircraft. In addition, they continued annual monitoring of southern California breeding populations of Brandt's and Double-crested Cormorants using aerial photographic surveys, and began conducting annual spring, fall, and winter surveys of seabird roosts in the same area.

REPORT OF THE TREASURER – 1999

REPORT OF THE TREASURER SEPTEMBER 30, 1998 TO SEPTEMBER 30, 1999

By *W. Breck Tyler*

This report comprises a balance sheet for all active accounts of the Pacific Seabird Group (as of September 30, 1999) and a brief discussion of finances and membership during the past fiscal year. The cash flow report for the past fiscal year could not be completed in time for this publication.

Assets, Equity, and Liabilities

On September 30, 1999, the total assets in PSG accounts were $167,585.86 (Table 1). About 90% of these assets ($150,799.27) were equity. Total equity increased by $37,506.04 during the past fiscal year. The major sources of new equity were the endowment fund ($14,504.73) and the annual meeting ($14,580.12) which are discussed in more detail below. Principal liabilities included $15,625.00 for continued work on the Seabird Monitoring Database and $595.00 in unreimbursed expenses from the 1999 Annual Meeting.

Endowment Account

On September 30, 1999 the PSG endowment account was worth $84,930.83 ($21.58/share). We own 3935.627 shares in Neuberger & Berman Management, Inc.'s Guardian Fund, an increase of 652.359 shares during the past fiscal year. Share and account value have fluctuated significantly in line with the volatility of the stock market. For example, three months earlier (July 1, 1999) the account value was $101,036.18 ($25.72/share). PSG members who are interested in the endowment fund are encouraged to check the mutual fund tables in their newspapers for the current share values. Capital gains and dividends from the account totaled $13,942.49 and were automatically reinvested in the account

Other accounts

Balances in the PSG Savings Account ($49,004.10) and the Treasurer's Account ($15,013.98) at the end of this fiscal year were somewhat higher than is usual. After payment of liabilities and the costs of the second issue of Pacific Seabirds and the 2000 annual meeting announcement, funds in excess of approximately two years operating expenses will be transferred to the endowment fund.

The Pacific Seabirds Account, managed by Editor Steven Speich, contains funds used in the publication and mailing of *Pacific Seabirds*. The United Kingdom Membership Account, managed by Mark Tasker, is used for deposits of membership dues paid in pounds sterling. A conversion rate of 1.00 pounds to 1.67 US dollars was used for the value in Table 1.

The EVOS Workshop and Publication account contained funds from the EVOS Trustee Council designated for production of a book on the 1995 Seabird Restoration Workshop. PSG has decided not to continue with this project and the $15,000 advance has been repaid. We are in the process of closing this account and transferring the funds to the Savings Account.

Table 1. Pacific Seabird Group Balance Sheet, September 30, 1999

Account	Balance	
	30 Sept 98	30 Sept 99
Annual Meeting – Washington 1999	- - -	$6000.00
Annual Meeting – Napa 2000	$1000.00	- - -
Neuberger & Berman Guardian Fund	$84,930.83	$70,426.10
Pacific Seabirds Account	$1,738.01	$5,005.65
Savings Account – Dean Witter	$49, 004.10	$16, 894.07
Treasurer's Account	$15,013.98	$3,052.84
UK Membership Account	$469.42	$134.19
EVOS Workshop & Publication	$15,429.52	$15,140.27
Total Assets	**$167, 585.86**	**$116,653.12**
Liabilities and Equity		
Liabilities	$16,786.59	$3,359.89
Equity	$150, 799.27	$113,293.23
Total Liabilities and Equity	**$167,585.86**	**$116,653.12**

REPORT OF THE TREASURER

Annual Meetings

Finances for the 1999 Annual Meeting in Blaine, WA are summarized in Table 2. Registration and other use fees at the meeting produced a profit of $11,630.36 which was deposited in the PSG savings account. Fundraising efforts (tee shirt sales, auction, etc.) generated a profit of $2,949.76 which was deposited in the endowment account. We have loaned the Napa meeting's local committee $1,000 to cover the hotel deposit.

Membership

At the writing of this report, there were 444 active memberships in PSG -- 330 regular memberships (individual and family), 58 life members, 2 corresponding members, and 54 student members. A total of 106 new members joined PSG last year (79 regular and 27 student); the majority joined at the annual meeting. A total of 49 libraries receive Pacific Seabirds of which 23 have paid subscriptions.

Submitted by **W. Breck Tyler,**
PSG Treasurer, October 24, 1999.

Table 2. Cash Flow Report – 1999 Annual Meeting

Items		Amounts	
Meeting Income			
Registration and other fees paid	$50,985.62		
Meeting support gifts		$1,750.00	
Total income		**$52,735.62**	
Meeting Expenses			
Facility, food, etc.	$37,482.41		
Speaker travel	$2,772.96		
Field trips	$49.89		
Total expenses		**$41,105.26**	
Profit			**$11,630.36**
Fundraising Income			
Tee shirts	$2,338.00		
Books	$72.00		
Auction	$2,012.00		
Total income		**$4,422.00**	
Total Expenses		**$1,472.24**	
Profit			**$2,949.76**
Meeting accounting			
Meeting profit	$11630.36		
Fundraising profit	$2949.76		
Membership dues	$1679.00		
Unreimbursed expenses	$1423.06		
Loan repayment	$6000.00		
Total	**$23,667.18**		
Cashier's check	$23,667.18		
Balance	**0**		

PUBLISHED PROCEEDINGS OF SYMPOSIA OF THE PACIFIC SEABIRD GROUP

At irregular intervals the Pacific Seabird Group holds symposia at its annual meetings. Published symposia are listed below. Available symposia may be purchased by sending a check or money order (in US Dollars, made payable to Pacific Seabird Group) to the PSG Treasurer. Prices include postage (surface rates) and handling. See the membership application/publication order form to order symposia.

SHOREBIRDS IN MARINE ENVIRONMENTS. Frank A. Pitelka (Editor). Proceedings of an International Symposium of the Pacific Seabird Group. Asilomar, California, January 1977. Published June 1979 in Studies in Avian Biology, Number 2. Out of print.

TROPICAL SEABIRD BIOLOGY. Ralph W. Schreiber (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Honolulu, Hawaii, December 1982. Published February 1984 in Studies in Avian Biology, Number 8. Out of print.

MARINE BIRDS: THEIR FEEDING ECOLOGY AND COMMERCIAL FISHERIES RELATIONSHIPS. David N. Nettleship, Gerald A. Sanger, and Paul F. Springer (Editors). Proceedings of an International Symposium of the Pacific Seabird Group, Seattle, Washington, January 1982. Published 1984 as Canadian Wildlife Service, Special Publication. Out of print.

ECOLOGY AND BEHAVIOR OF GULLS. Judith L. Hand, William E. Southern, and Kees Vermeer (Editors). Proceedings of an International Symposium of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Published June 1987 in Studies in Avian Biology, Number 10. $18.50.

AUKS AT SEA. Spencer G. Sealy (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published December 1990 in Studies in Avian Biology, Number 14. $16.00.

STATUS AND CONSERVATION OF THE MARBLED MURRELET IN NORTH AMERICA. Harry C. Carter, and Michael L. Morrison (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published October 1992 in Proceedings of the Western Foundation of Vertebrate Zoology, Volume 5, Number 1. $20.00.

THE STATUS, ECOLOGY, AND CONSERVATION OF MARINE BIRDS OF THE NORTH PACIFIC. Kees Vermeer, Kenneth T. Briggs, Ken H. Morgan, and Douglas Siegel-Causey (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Canadian Wildlife Service, and the British Columbia Ministry of Environment, Lands and Parks, Victoria, British Columbia, February 1990. Published 1993 as Canadian Wildlife Service, Special Publication, Ministry of Supply and Services, Canada, Catalog Number CW66-124-1993E. Free. Write: Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A OH3, Canada.

BIOLOGY OF MARBLED MURRELETS - INLAND AND AT SEA. S. Kim Nelson and Spencer G. Sealy (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Seattle, Washington, February 1993. Published 1995 in Northwestern Naturalist, Volume 76, Number 1. $12.00.

BEHAVIOUR AND ECOLOGY OF THE SEA DUCKS. Ian Goudie, Margaret Peterseen and Gregory J. Robertson (Editors). Proceedings of the Pacific Seabird Group Symposium, Victoria, British Columbia, 8-12 November 1995. A special publication compiled by the Canadian Wildlife Service for the Pacific Seabird Group. In press.

SEABIRD BYCATCH: TRENDS, ROADBLOCKS AND SOLUTIONS. Edward F. Melvin and Julia K. Parrish (Editors). Proceedings of an International Symposium of the Pacific Seabird Group, Semi-Ah-Moo, Washington, February 1999. To be published by University of Alaska Sea Grant, Fairbanks, Alaska. In preparation.

Pacific Seabird Group Symposia are initiated by one or more persons with interest in a particular topic area, resulting in a collection of papers usually presented at an annual meeting of the Pacific Seabird Group. Some symposia are further refined and then published as a Symposium of the Pacific Seabird Group. Individuals interested in promoting future symposia must first contact the Coordinator of the Publications Committee, and the appropriate annual meeting scientific program coordinator, prior to initiating the process leading to the actual symposium session and possible publication. The necessary guidelines outlining the steps and responsibilities for obtaining approval, organizing, holding and publishing Pacific Seabird Group Symposia will be provided. This opportunity is available to all members of the Pacific Seabird Group.

PACIFIC SEABIRD GROUP COMMITTEE COORDINATORS

Contact committee coordinators for information and activities of committees and how you can participate.

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